

**U.S. Army Corps of Engineers
Jacksonville District**

**DRAFT SUPPLEMENTAL ENVIRONMENTAL IMPACT
STATEMENT**

**Interim Operational Plan (IOP)
for Protection of the Cape Sable Seaside Sparrow**

Abstract: This Draft Supplemental Environmental Impact Statement (DSEIS) presents a final recommended plan, Alternative 7R, to be implemented as the Interim Operational Plan (IOP) for protection of the Cape Sable seaside sparrow. A Final EIS on IOP was issued on June 3, 2002, Alternative 7R was selected, and the Record of Decision (ROD) on IOP was signed in July 2002. Alternative 7R was subsequently implemented. An order issued by the United States District Court for the Southeastern District of Florida Miami Division requires the Corps to issue a Supplemental EIS. The Corps' NEPA analysis will include hydrologic modeling results that were not available at the time the FEIS was issued and the ROD signed, timeframes for implementing IOP, actual data collected since IOP implementation, and an analysis of the incorporation of previously authorized Alternative 7R structural features described in the 1992 Modified Water Deliveries to Everglades National Park report and the 1994 C-111 reports that will maintain flood protection capability, while continuing to provide full protection for the Cape Sable seaside sparrow and its habitat to the most practicable extent. The increased flood control and water management capability of the previously selected and implemented alternative is obtained by adding an additional pump station (S-332C) and seepage reservoirs along the L-31N Canal, as authorized for the C-111 Project to supplement the capacity of the existing pump station, S-332B, to lower canal and groundwater levels in advance of significant storms. Construction of the previously authorized pump station S-356 as authorized in the MWD Project in the Tamiami Canal is also included so that it can be used to return to Northeast Shark River Slough the seepage from the northern reach of the L-31N Canal, thereby lowering canal stages in advance of storms. These pump stations were built as interim structures to enable their completion, along with associated seepage reservoirs, for use in protecting sparrow habitat during the upcoming wet seasons. Alternative 7R incorporates the system operations of Alternative 7, including a second seepage reservoir for Pump Station S-332B and the removal of the southern four miles of Levee 67 Extension and canal. This DSEIS describes and evaluates Alternative 7R in comparison with the alternatives previously addressed in the earlier NEPA documents, which are incorporated herein by reference.

Send Your Comments to the
District Engineer by **August 14, 2006**

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EXECUTIVE SUMMARY

Background. On February 19, 1999, the FWS issued a Final Biological Opinion (B.O.) under provisions of the Endangered Species Act of 1973, as amended, for actions required to assure the survival of the endangered Cape Sable Seaside Sparrow, related to operation of components of the Central and Southern Florida (C&SF) Project in Miami-Dade County. The B.O. referenced specifically rapid implementation of structural and operational changes under the Modified Water Deliveries (MWD) Project, to existing operations under Test 7 of the Experimental Program of Water Deliveries, and to the C-111 Canal Project. The B.O. concluded that continuation of Test 7, Phase I operations would cause adverse modification of Cape Sable Seaside Sparrow (CSSS) critical habitat and would jeopardize the continued existence of the CSSS. The B.O. presented Reasonable and Prudent Alternatives to the then existing operations that would avoid jeopardizing the CSSS. The RPA recommended that the following hydrological conditions be met for protection of the CSSS: 1) A minimum of 60 consecutive days of water levels at or below 6.0 feet NGVD at the NP 205 gauge between March 1 and July 15; 2) Ensure that 30%, 45%, and 60% of required regulatory releases crossing Tamiami Trail enter ENP east of L-67 extension in 2000, 2001, and 2002, respectively, or produce hydroperiods and water levels in the vicinity of subpopulations C, E, and F that meet or exceed those produced by the 30% , 45% , and 60% targets; and 3) Produce hydroperiods and water levels in the vicinity of subpopulations C, E, and F that equal or exceed conditions that would be produced by implementing the exact provisions of Test 7, Phase II operations (USACE 1995); and implement the entire MWD project no later than December, 2003.

Emergency deviations from Test 7 were authorized in 1998, 1999, 2000, and 2001 by CEQ to allow the Corps to conduct water control operations to protect the CSSS (USACE 1999b; USACE 1999c; USACE 2000). These Interim Structural and Operational Plans (ISOP) enabled the Corps to maintain water levels, particularly in the western CSSS populations, that would maximize breeding seasons for the sparrow.

During implementation of the ISOP, the U.S. Army Corps of Engineers (Corps) received confirmation from the FWS that producing the hydrologic equivalent of the 30, 45, and 60% conditions, as opposed to the actual release percentages, would also meet the FWS RPA conditions until the implementation of MWD. The implemented Interim Operational Plan (IOP) alternative which is being recommended in this SEIS allows the Corps to meet or provide the hydrologic equivalent of the FWS RPA conditions, while managing the system for purposes authorized under the C&SF Project.

Alternatives. In late 2000, through 2001 and into early 2002, representatives from the Corps, South Florida Water Management District, Department of Interior, Fish and Wildlife Service and National Park Service, Miami-Dade Department of Environmental Resource Management (DERM), Florida Department of Environmental Protection, Florida Fish and Wildlife Conservation Commission and others evaluated a number of options that had potential as solutions in satisfying the project purpose by using 1995 Base conditions and the ISOP

operations as a base. These options included changes in operational criteria for existing structures throughout the region that could influence water levels within the various CSSS subpopulations. Two interagency modeling meetings were held to discuss potential options for meeting the criteria stated in the FWS B.O. and to evaluate modeling runs produced by the Corps prior to the meetings. Changes in the operation of various structures were proposed during the meetings and in subsequent correspondence, and appropriate model runs were produced. The modeling runs were posted on the Jacksonville District, Corps of Engineers Website as each was produced. The interagency review team members were informed as the model runs were posted, and comments and suggestions were used to modify the potential alternative plans. The alternative models were compared to the 1995 Base conditions, which represent conditions under normal C&SF operations with Test 7, Phase I operations in the ENP/South Dade Conveyance System (SDCS) prior to emergency deviations.

Six alternative plans were developed and analyzed in the February 2001 Draft EIS. Following release of the Draft EIS, the Council on Environmental Quality (CEQ), Institute for Environmental Conflict Resolution (IECR) facilitated a collaborative interagency team from the Corps, FWS, SFWMD, and ENP to formulate a consensus alternative that met the criteria in the B.O. while providing for maximum protection of the resource concerns of the interested parties. The plan proposed during this process, Alternative 7, consists of two different modes of water management operation for SDCS and a structural modification of the L-67 extension levee. The first mode is "No WCA 3A regulatory releases to SDCS" operation in which L-31N canal would be maintained at Test 7 Phase I level when there are no WCA 3A regulatory releases. Citing a concern that maintaining L-31N canal at ISOP level would impact Everglades National Park resources, a "No WCA 3A regulatory releases to SDCS" operation was proposed that essentially reverts back to Test 7 Phase I canal level when no regulatory releases are routed through S-333 and S-334 to SDCS. The Corps along with SFWMD agreed to incorporate this operation as part of Alternative 7.

The second mode of operations is "WCA 3A regulatory releases to SDCS" operation in which L-31N canal would be lowered to minimize potential flood impacts in SDCS and at the same time, provide necessary downstream gradient to move WCA 3A regulatory releases through S-333 and S-334. The purpose of routing of regulatory releases (releases needed to lower WCA-3A stages when they exceed that water body's Regulation Schedule) from WCA 3A to SDCS with lower canal stage in L-31N is to provide sufficient water to be delivered via S-332B to the habitats of sparrow sub-populations E and F and at the same time, minimize potential flooding impacts to 8.5 SMA and agricultural areas adjacent to L-31N canal.

Alternative 7 included an additional 240 acre retention basin at the S-332B structure, increasing capacity from 160 acres of retention to 400 acres, and operations of this area, intended to re-hydrate adjacent CSSS habitat inside the Park, would be modified to avoid pumping to overflow except under unusual and uncommon circumstances.

Modifications to Alternative 7 were developed in response to comments submitted by the public and cooperators during the NEPA comment period. The Stakeholders including the SFWMD and agricultural interests commented that the existing capability for flood control in the agricultural and residential areas potentially affected by the project might be adversely

affected and must be maintained. With the existing water management infrastructure, the higher L-31N Canal stages that would occur under Alternative 7 might not, under certain meteorological conditions, allow for sufficient draw-down of groundwater levels in advance of significant impending storms to meet this criterion. Consequently, Alternative 7 would potentially result in an increased risk of flooding over the then current conditions.

To address this concern, Alternative 7 was adjusted and is now described as Alt.7R. It provides increased capability to draw down groundwater levels when a significant storm is predicted, while retaining all of the sparrow protection features of Alternative 7. The increased capability was obtained by adding an additional pump stations (S-332C) and seepage reservoirs along the L-31N Canal to supplement the capacity of S-332B to lower canal and groundwater levels. The pump stations draw water out of the canal, thus lowering adjacent groundwater levels. The water is pumped into reservoirs along the eastern boundary of the Park. Some of the pumped water would return to the canal, but there is a net gain in lowering canal stages. During non-storm conditions, the pump stations are operated at reduced capacity to maintain a water depth in the reservoirs necessary to create a continuous hydraulic ridge along the Park boundary for seepage control. This hydraulic ridge concept was developed in the authorized C-111 project. The pumping was adjusted seasonally to maintain the desired water conditions in sparrow habitat within the Park conducive to breeding and habitat maintenance. In conjunction with these features along L-31N, the authorized S-356 pump station was constructed in the Tamiami Canal where it will be used to collect seepage from ENP along the reach of the L-31N canal which extends from S-335 to G-211 by pumping water west behind the existing S-334 structure and thence into NESRS when conditions permit. Table ES-1 displays the operating parameters for Alternative 7R.

The Corps has not considered the structural elements, which are presently under construction as authorized features of the MWD and C-111 projects, as proposed features of Alternative 7R. However, their construction has been scheduled in conjunction with evaluation of Alternative 7R, and their construction and operation are being addressed in this DSEIS. Pump capacity and systems operations will further be assessed under the Combined Structural and Operational Plan (CSOP) now under development and expected to be implemented upon completion of construction of the MWD project in Dec 2009.

Environmental Consequences of the Recommended Alternative. The recommended alternative (Alternative 7R) affects hydrology of Northeast Shark River Slough (NESRS), western SRS, and WCA 3A and 3B. The hydrology of WCA 2A and 2B is also affected, but only to the same degree as it was previously under ISOP. Hydrological effects (better CSSS breeding conditions) are beneficial in NESRS and WSRS as recommended in the FWS B.O. Minor adverse effects due to raised water levels may have occurred in the vicinity of tree islands in the southern portions of WCA 3A and 3B. Alternative 7R has benefited Taylor Slough hydrology.

Impacts to vegetation under the recommended alternative are similar to those of the ISOP. Increased ponding depths and hydroperiod in NESRS provide the desired consequence of approaching natural hydrologic conditions more closely, excluding exotic nuisance species and encouraging natural wetland species. A reduction in annual flooding duration in WSRS is

beneficial to native vegetative species. Increased flood duration could lead to loss of some wetland vegetation in WCA 2A and 3A as well as upland vegetation (including tree islands) in the southern portion of the areas. Construction of the S-332B seepage reservoir impacted Florida panther habitat, but the nature of the impact and the quality of the habitat are both minimal.

Under the recommended alternative no overflows would occur at the S-332B structure once construction is complete. Therefore, no introduction of waters containing undesirable nutrient levels into the Park would occur. Construction of the additional C-111 seepage reservoirs, and their operation under the modified operational plan in conjunction with the existing seepage reservoir, has reduced the need for overflow in the region. Since 2002, there have been four overflow events at the S-332B detention area; two events in 2003 and two events in 2005, but none of the events were considered significant in terms of phosphorus loading.

Areas of Controversy and Unresolved Issues.

Few issues remain unresolved with various commenting agencies and other non-governmental groups regarding the proposed project. Potential impacts to tree islands have been minimized to the greatest practicable extent, as have potential water quality impacts due to releases entering the Everglades National Park. Flooding impacts to residential and agricultural lands above current levels would not likely occur with the recommended alternative.

Comments were received from a number of stakeholders regarding the use of the South Florida Water Management Model (SFWMM) for the hydrologic analysis, which uses two-mile square grids. This model does not allow for a detailed assessment of small, localized areas that may be affected by the project. However, no better model was available for use during the time frame of development of this project. The Corps is working with the other agencies to implement models that are capable of the resolution appropriate for site-specific analysis. In addition, actual hydrologic data collected during IOP implementation have confirmed the previous modeling predictions.

Pre-storm\Storm\Storm Recovery Operations have accounted for only 4 percent of the total time from IOP implementation in 2002 through 2005. Initiation of these operations depends on a number of conditions that are determined on a case-by-case basis. The antecedent conditions that trigger storm-related operations include pending rainfall events, groundwater table elevation, and canal elevations at the time of the pending rainfall event.

Water managers from the Corps and the SFWMD currently coordinate operations on a daily basis or more frequently. In addition, the Corps coordinates with other parties that may be affected by operational decisions on an as needed basis. The water managers use actual real-time hydrologic data and weather forecasts to determine appropriate operations.

The Jacksonville District uses the Corps wide standard software and database structure for real-time water control developed by the Hydrologic Engineering Center (HEC) in Davis, California. Time series hydrometeorologic data is stored, retrieved, and displayed using HEC Data Storage System (DSS) databases and programs.

The Jacksonville District receives data from data collection platforms (DCP's). DCP's are devices installed at remote gaging stations which measure real-time data including water surface and groundwater elevations, stream stages, reservoir elevations, cumulative precipitation, wind speed and direction and barometric pressure. Data are transmitted from the DCP via Geostationary Operational Environmental Satellite (GOES) to an earth downlink receiver operated by NOAA/NESDIS in Wallops Island, Virginia.

Automated timed processes also provide provisional near real-time data needed for operations. Additional data is received through an interagency data exchange program between South Florida Water Management District (SFWMD), St. Johns River Water Management District (SJRWMD), Southwest Florida Water Management District (SWFWMD) and Everglades National Park (ENP).

A direct link to the National Weather Service, Southeast River Forecast Center is maintained to provide real-time text and graphics products generated by National Weather Service offices. Information includes weather and flood forecasts and warnings, tropical storm information, NEXRAD radar rainfall, graphical weather maps and more. Selected products are disseminated to area offices in Clewiston, Florida and San Juan, Puerto Rico and posted to internet homepages. Satellite images are also important in making and implementing water management decisions.

A World Wide Web homepage was setup to disseminate information and can be accessed at <http://www.saj.usace.army.mil/h2o/>.

The Corps continues to conduct hydrologic modeling and, after consultation with the FWS, ENP, and SFWMD, will continue to modify operational parameters as required until the full C-111 and Modified Water Deliveries projects are implemented. In addition, monitoring of vegetative communities, water quality, and fish and wildlife communities is ongoing, and any new data will be used to improve upon the water management operations.

This Interim Operational Plan will be superseded after ROD for CSOP is signed and when all elements of the MWD Project are built and capable of operating. Currently the MWD project elements are scheduled to be constructed by the end of 2010, and the CSOP plan is scheduled for authorization in 2007.

Table ES-1. Alternative 7R Operations.

	No WCA-3A Regulatory Releases to SDCS or Shark Slough	WCA-3A Regulatory Releases to SDCS
Regulation Schedule	Deviation schedule for WCA-3A, November 2000 WCA-3A interim regulation schedule) as specified by USACE including raising Zone D to Zone C from Nov 1 to Feb 11. No deviation in WCA-2A regulation schedule.	Deviation schedule for WCA-3A, November 2000 WCA-3A interim regulation schedule) as specified by USACE including raising Zone D to Zone C from Nov 1 to Feb 11. No deviation in WCA-2A regulation schedule.
S-343 A/B and S-344	Closed Nov 1 to July 15 independent of WCA-3A levels.	Closed Nov 1 to July 15 independent of WCA-3A levels.
S-12 A/B/C/D Sandbag culverts under Tram Road by 1 February if necessary.	S-12A closed Nov 1 to Jul 15; S-12B closed Jan 1 to Jul 15; S-12C closed Feb 1 to Jul 15; S-12D no closure dates. Follow WCA 3A regulation schedule after Jul 15. Note: If closure requires regulatory releases to SDCS then switch to operations for regulatory releases to SDCS.	S-12A closed Nov 1 to Jul 15; S-12B closed Jan 1 to Jul 15; S-12C closed Feb 1 to Jul 15; S-12D no closure dates. Follow WCA 3A regulation schedule after Jul 15.
S-333: G-3273 < 6.8' NGVD Degrade the lower four miles of the L-67 extension	55% of the rainfall plan target to NESRS and 45% through the S-12 structures When WCA-3A is in Zone E1 or above, maximum practicable through S-333 to NESRS per WCA-3A deviation schedule.	55% of the rainfall plan target to NESRS, plus as much of the remaining 45% that the S-12s can't discharge to be passed through S-334; and subject to capacity constraints, which are 1350 cfs at S-333, L-29 maximum stage limit, and canal stage limits downstream of S-334. When WCA-3A is in Zone E1 or above, maximum practicable through S-333 to NESRS per WCA-3A deviation schedule.
S-333: G-3273 > 6.8' NGVD	Closed	Match S-333 with S-334 flows
L-29 constraint	9.0 ft	9.0 ft
S-355A&B	Follow the same constraints as S-333. Open whenever gradient allows southerly flow.	Follow the same constraints as S-333. Open whenever gradient allows southerly flow.
S-337	Water Supply	Regulatory releases as per WCA-3A deviation schedule.
S-151	Water Supply	Regulatory releases as per WCA-3A deviation schedule.
S-335	Water Supply The intent is to limit the volume of water passed at S335 to pre-ISOP conditions and not use S332B, S332C, or S332D or other triggers to pass additional flows. Note: It is recognized that under these conditions operations of S-335 would be infrequent.	When making regulatory releases through S-151, limit S-335 outflows to not exceed inflows from the S-151/S-337 path Use S-333/S-334 before S-335/S-151/S-337
S-334	Water Supply	Pass all or partial S-333 flows Depending on stage at G-3273
S-338	Open 5.8 Close 5.5	Open 5.8 Close 5.4

	No WCA-3A Regulatory Releases to SDCS or Shark Slough	WCA-3A Regulatory Releases to SDCS
G-211 Tailwater constraint 5.3	Open 6.0 Close 5.5	Open 5.7 Close 5.3
S-331	Angel's Criteria	Angel's Criteria
S-332B Note 1: There will be two 125-cfs pumps and one 75-cfs pump directed to the west seepage reservoir. The remaining two 125-cfs pumps will be directed to the north seepage reservoir. Note 2: A new indicator will be established for Subpopulation F. Operations will be modified as necessary to achieve desired habitat conditions consistent with the restoration purposes outlined in the C-111 GRR.	Pumped up to 575 cfs* On 5.0 Off 4.7** *Pump to capacity if limiting conditions within the Sparrow habitat are not exceeded. There will be no overflow into the Park when the project (i.e., the S-332B north seepage reservoir and the partial S-332B/S-332C connector) is complete and when it is practical to do the construction necessary to raise the western levee. There may be overflow during emergency events until the project is complete and the western levee is raised. **If, after the first 30 days of operation, there is no observed drawdown at the pump, this stage level will be raised to 4.8	Pumped up to 575 cfs* On 4.8 Off 4.5 *Pump to capacity if limiting conditions within the Sparrow habitat are not exceeded. There will be no overflow into the Park when the project (i.e., the S-332B north seepage reservoir and the partial S-332B/S-332C connector) is complete and when it is practical to do the construction necessary to raise the western levee. There may be overflow during emergency events until the project is complete and the western levee is raised.
S-332B North Seepage Reservoir	The north reservoir is the new 240-acre reservoir located to the north of the pump station with a weir discharging to the east. Normal operations will be targeted to achieve marsh restoration. However, this provision does not include a requirement to maintain water levels in the reservoirs during dry conditions by bringing water in from outside the drainage basin. This seepage reservoir will have a normal maximum depth of water of 2.0 feet. However, if the Corps determines that a flood emergency exists similar to an event like the "No Name" storm, the depth of water would be increased to 4.0 feet when possible.	The north reservoir is the new 240-acre reservoir located to the north of the pump station with a weir discharging to the east. Normal operations will be targeted to achieve marsh restoration. However, this provision does not include a requirement to maintain water levels in the reservoirs during dry conditions by bringing water in from outside the drainage basin. This seepage reservoir will have a normal maximum depth of water of 2.0 feet. However, if the Corps determines that a flood emergency exists similar to an event like the "No Name" storm, the depth of water would be increased to 4.0 feet when possible.
S-332B West Seepage Reservoir	The west reservoir is the existing 160-acre reservoir and is to the west of the pump station. There will be no overflow into the Park when the project (i.e., the S-332B north seepage reservoir and the partial S-332B/S-332C connector) is complete and when it is practical to do the construction necessary to raise the western levee. There may be overflow during emergency events until the project is complete and the western levee is raised.	The west reservoir is the existing 160-acre reservoir and is to the west of the pump station. There will be no overflow into the Park when the project (i.e., the S-332B north seepage reservoir and the partial S-332B/S-332C connector) is complete and when it is practical to do the construction necessary to raise the western levee. There may be overflow during emergency events until the project is complete and the western levee is raised.

	No WCA-3A Regulatory Releases to SDCS or Shark Slough	WCA-3A Regulatory Releases to SDCS
	<p>Normal operations will be targeted to achieve marsh restoration. However, this provision does not include a requirement to maintain water levels in the reservoirs during dry conditions by bringing water in from outside the drainage basin.</p> <p>This seepage reservoir will have a normal maximum depth of water of 2.0 feet. However, if the Corps determines that a flood emergency exists similar to an event like the "No Name" storm, the depth of water would be increased to 4.0 feet.</p>	<p>Normal operations will be targeted to achieve marsh restoration. However, this provision does not include a requirement to maintain water levels in the reservoirs during dry conditions by bringing water in from outside the drainage basin.</p> <p>This seepage reservoir will have a normal maximum depth of water of 2.0 feet. However, if the Corps determines that a flood emergency exists similar to an event like the "No Name" storm, the depth of water would be increased to 4.0 feet.</p>
<p>S332C</p> <p>The S-332C pump capacity is temporary. A new indicator will be established and a new gauge will be installed in Rocky Glades. Operations will be modified as necessary to achieve desired habitat conditions consistent with the restoration of Taylor Slough based on the C-111 GRR.</p>	<p>Pumped up to 575 cfs*</p> <p>On 5.00 Off 4.70**</p> <p>* Pump to capacity unless habitat conditions are not being achieved within the Rocky Glades. There will be no overflow into the Park.</p> <p>**If, after the first 30 days of operation, there is no observed drawdown at the pump, this stage level will be raised to 4.8</p>	<p>Pumped up to 575 cfs*</p> <p>On 4.8 Off 4.5</p> <p>* Pump to capacity unless habitat conditions are not being achieved within the Rocky Glades. There will be no overflow into the Park.</p>
S-332C Seepage Reservoir	<p>300 acres with overflow to the east</p> <p>Normal operations will be targeted to achieve marsh restoration. However, this provision does not include a requirement to maintain water levels in the reservoirs during dry conditions by bringing water in from outside the drainage basin.</p> <p>This seepage reservoir will have a normal maximum depth of water of 2.0 feet. However, if the Corps determines that a flood emergency exists similar to an event like the "No Name" storm, the depth of water would be increased to 4.0 feet.</p>	<p>300 acres with overflow to the east</p> <p>Normal operations will be targeted to achieve marsh restoration. However, this provision does not include a requirement to maintain water levels in the reservoirs during dry conditions by bringing water in from outside the drainage basin.</p> <p>This seepage reservoir will have a normal maximum depth of water of 2.0 feet. However, if the Corps determines that a flood emergency exists similar to an event like the "No Name" storm, the depth of water would be increased to 4.0 feet.</p>
S-332B/S-332C Connector	<p>141 acres partial 206 acres full 1,262 acres with the land swap</p> <p>Normal operations will be targeted to achieve marsh restoration. However, this provision does not include a requirement to maintain water levels in the reservoirs during dry conditions by bringing water in from outside the drainage basin.</p> <p>This seepage reservoir will have a</p>	<p>141 acres partial 206 acres full 1,262 acres with the land swap</p> <p>Normal operations will be targeted to achieve marsh restoration. However, this provision does not include a requirement to maintain water levels in the reservoirs during dry conditions by bringing water in from outside the drainage basin.</p> <p>This seepage reservoir will have a</p>

	No WCA-3A Regulatory Releases to SDCS or Shark Slough	WCA-3A Regulatory Releases to SDCS
	<p>normal maximum depth of water of 2.0 feet. However, if Corps determines that a flood emergency exists similar to an event like the "No Name" storm, the depth of water would be increased to 4.0'</p> <p>The Corps, FWS, ENP, and SFWMD will jointly develop a rule for emergency operations that is consistent with C-111 project purposes before the land swap B/C connector is used.</p>	<p>normal maximum depth of water of 2.0 feet. However, if Corps determines that a flood emergency exists similar to an event like the "No Name" storm, the depth of water would be increased to 4.0'.</p> <p>The Corps, FWS, ENP, and SFWMD will jointly develop a rule for emergency operations that is consistent with C-111 project purposes before the land swap B/C connector is used.</p>
S-332D	<p>Pumped up to 500 cfs from Jul 16 (or the end of the breeding season, as confirmed by FWS) to Nov 31; 325 cfs from Dec 1 to Jan 31; and 165 cfs* from Feb 1 to Jul 15. Meet Taylor Slough Rainfall formula consistent with marsh restoration (No L-31W constraint)</p> <p>On 4.85 Off 4.65</p> <p>*New information will be sought to evaluate the feasibility of modifying the 165 cfs constraint</p>	<p>Pumped up to 500 cfs from Jul 16 (or the end of the breeding season, as confirmed by FWS) to Nov 31; 325 cfs from Dec 1 to Jan 31; and 165 cfs* from Feb 1 to Jul 15. Meet Taylor Slough Rainfall formula consistent with marsh restoration (No L-31W constraint)</p> <p>On 4.7 Off 4.5</p> <p>*New information will be sought to evaluate the feasibility of modifying the 165 cfs constraint</p>
Frog Pond Seepage Reservoir	<p>810 acres with overflow into Taylor Slough</p> <p>Normal operations will be targeted to achieve marsh restoration. However, this provision does not include a requirement to maintain water levels in the reservoirs during dry conditions by bringing water in from outside the drainage basin.</p> <p>This seepage reservoir will have a normal maximum depth of water of 2.0 feet. However, if Corps determines that a flood emergency exists similar to an event like the "No Name" storm, the depth of water would be increased to a maximum of 4.0 feet. However, a depth of 4.0 feet in the Frog Pond is not possible at this time due to the constraint of the S-332D pump station outlet elevation.</p>	<p>810 acres with overflow into Taylor Slough</p> <p>Normal operations will be targeted to achieve marsh restoration. However, this provision does not include a requirement to maintain water levels in the reservoirs during dry conditions by bringing water in from outside the drainage basin.</p> <p>This seepage reservoir will have a normal maximum depth of water of 2.0 feet. However, if Corps determines a flood emergency exists similar to an event like the "No Name" storm, the depth of water would be increased to a maximum of 4.0 feet. However, a depth of 4.0 feet in the Frog Pond is not possible at this time due to the constraint of the S-332D pump station outlet elevation.</p>
S-332	Closed	Closed
S-175	Closed	Closed
S-194	Open 5.5 Close 4.8	Operated to maximize flood control discharges to coast Open 4.9 Close 4.5
S-196	Open 5.5 Close 4.8	Operated to maximize flood control discharges to coast Open 4.9 Close 4.5
S-176	Open 5.0 Close 4.75	Open 4.9 Close 4.7
S-177	Open 4.2 (see S-197 open)	Open 4.2 (see S-197 open)

	No WCA-3A Regulatory Releases to SDCS or Shark Slough	WCA-3A Regulatory Releases to SDCS
	Close 3.6	Close 3.6
S-18C	Open 2.6 Close 2.3	Open 2.25 Close 2.00
S-197	<p>If S-177 headwater is greater than 4.1 or S-18C headwater is greater than 2.8 open 3 culverts</p> <p>If S-177 headwater is greater than 4.2 for 24 hours or S-18C headwater is greater than 3.1 open 7 culverts</p> <p>If S-177 headwater is greater than 4.3 or S-18C headwater is greater than 3.3 open 13 culverts</p> <p>Close gates when all the following conditions are met:</p> <ol style="list-style-type: none"> 1. S-176 headwater is less than 5.2 and S-177 headwater is less than 4.2 2. Storm has moved away from the basin 3. After Conditions 1 and 2 are met, keep the number of S-197 culverts open necessary only to match residual flow through S-176. All culverts should be closed if S-177 headwater is less than 4.1 after all conditions are satisfied. 	<p>If S-177 headwater is greater than 4.1 or S-18C headwater is greater than 2.8 open 3 culverts</p> <p>If S-177 headwater is greater than 4.2 for 24 hours or S-18C headwater is greater than 3.1 open 7 culverts</p> <p>If S-177 headwater is greater than 4.3 or S-18C headwater is greater than 3.3 open 13 culverts</p> <p>Close gates when all the following conditions are met:</p> <ol style="list-style-type: none"> 1. S-176 headwater is less than 5.2 and S-177 headwater is less than 4.2 2. Storm has moved away from the basin 3. After Conditions 1 and 2 are met, keep the number of S-197 culverts open necessary only to match residual flow through S-176. All culverts should be closed if S-177 headwater is less than 4.1 after all conditions are satisfied.
S-356	When conditions permit (i.e., G-3273 and L-29 constraints), discharges from S356 will go into L-29. Pumping will be limited to the amount of seepage into L-31N in the reach between S-335 and G-211. A technical team will evaluate pumping limits and operations. The pumps will be operated accordingly.	When conditions permit (i.e., no S-334 regulatory releases and G-3273 and L-29 constraints), discharges from S356 will go into L-29. Pumping will be limited to the amount of seepage into L-31N in the reach between S-335 and G-211. A technical team will evaluate pumping limits and operations. The pumps will be operated accordingly.

Note: Prestorm drawdown will be the same as in the Oct 01 SDEIS with the additional language....

Operations for other than named events. SFWMD will monitor antecedent conditions, groundwater levels, canal levels and rainfall. If these conditions indicate a strong likelihood of flooding, SFWMD will make a recommendation to the Corps to initiate pre-storm operations. The Corps will review the data, advise ENP, FWS of the conditions, consult with the Miccosukee Tribe and make a decision whether to implement pre-storm drawdown or otherwise alter systemwide operations from those contained in the table.

Note: The Chairman of the Miccosukee Tribe of Indians of South Florida or his designated representatives, will monitor the conditions in WCA3A and other tribal lands and predicted rainfall. If the Tribe determines these conditions indicate jeopardy to the health or safety of the Tribe, the Chairman will make a recommendation to the Corps to change the operations of the S12 structures or other parts of the system. The Corps will review the data, advise appropriate agencies of the conditions, and the District Commander will personally consult with the Chairman prior to making a decision whether to implement changes to the S12 operations.

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LIST OF ACRONYMS

C-x	Canal
C&SF	Central and South Florida
CEQ	Council on Environmental Quality
cfs	Cubic Feet per Second
CSSS	Cape Sable Seaside Sparrow
CSOP	Combined Structural and Operational Plan
DERM	Department of Environmental Resources Management
EA	Environmental Assessment
EAA	Everglades Agricultural Area
EIS	Environmental Impact Statement
ENP	Everglades National Park
ESA	Endangered Species Act
FDACS	Florida Department of Agriculture and Consumer Services
FDEP	Florida Department of Environmental Protection
FFWCC	Florida Fish and Wildlife Conservation Commission
FONSI	Finding of No Significant Impact
G-x	Gaging Station or Culvert Structure
GDM	General Design Memorandum
GRR	General Reevaluation Report
HTRW	Hazardous, Toxic, and Radioactive Waste
IECR	Institute for Environmental Conflict Resolution
IOP	Interim Operational Plan
ISOP	Interim Structural and Operational Plan
L-x	Levee
LEC	Lower East Coast
MWD	Modified Water Deliveries to Everglades National Park
NEPA	National Environmental Policy Act
NGVD	National Geodetic Vertical Datum
NOI	Notice of Intent
NPS	National Park Service
NESRS	Northeast Shark River Slough
PL	Public Law
ROD	Record of Decision
S-x	Pump Station, Spillway, or Culvert
SDCS	ENP/South Dade Conveyance System
SFWMD	South Florida Water Management District
SMA	Square Mile Area
SRS	Shark River Slough
USACE	U.S. Army Corps of Engineers
FWS	U.S. Fish and Wildlife Service
FWS RPA	U.S. Fish and Wildlife Service Reasonable and Prudent Alternative
FWS B.O.	U.S. Fish and Wildlife Service Biological Opinion
WCA	Water Conservation Area

1.0 PURPOSE AND NEED FOR THE CONSIDERED ACTION

1.1 Project Authorization

A minimum schedule of water deliveries from the Central and Southern Florida (C&SF) Project to the Everglades National Park (ENP) was authorized by Congress in 1969 in Public Law (PL) 91-282. Section 1302 of the Supplemental Appropriations Act of 1984 (PL 98-181), passed in December 1983, authorized the U.S. Army Corps of Engineers (Corps), with the concurrence of the National Park Service (NPS) and the South Florida Water Management District (SFWMD), to deviate from the minimum delivery schedule for two years in order to conduct an Experimental Program of water deliveries to improve conditions within the ENP. Section 107 of PL 102-104 amended PL 98-181 to allow continuation of the Experimental Program until modifications to the C&SF Project authorized by Section 104 of the ENP Protection and Expansion Act of 1989 (PL 101-229) were completed and implemented. PL-101-229 eventually led to the Modified Water Deliveries (MWD) Report and Project (USACE 1992). The last feature of the MWD Project (Tamiami Trail) is scheduled to be completed in 2008, and would provide for increased water deliveries to the Park through a route that more closely approximates the original historic flow-way down the center of Northeast Shark River Slough (NESRS).

The Modified Water Deliveries to Everglades National Park General Design Memorandum (MWD GDM) and Final EIS were published in July, 1992. The MWD FEIS includes a discussion of the location capacity, and environmental impacts of the S-356 pump station and degradation of the L-67 Levee extension south of Tamiami Trail, along with other recommended features. The Canal-111 (C-111) South Dade County 1994 Integrated General Reevaluation Report (GRR) and EIS was published in May 1994. This report described a conceptual plan for five pump stations and levee-bounded retention structures to be built west of the L-31 North Canal between the 8.5 Square Mile Area and the Frog Pond to control seepage out of Everglades National Park while providing flood mitigation to agricultural lands east of C-111. The original and current configuration of these structural features is further discussed in the description of IOP Alternative (Alt) 7R.

Test Iteration 7 of the Experimental Program of Modified Water Deliveries to ENP (herein referenced as the 1995 Base) was initiated in October 1995 (USACE 1995). In February 1999, the U.S. Fish and Wildlife Service (FWS) issued a Final Biological Opinion (B.O.) under provisions of the Endangered Species Act (ESA), which concluded that Test 7, Phase I was jeopardizing the continued existence of the Cape Sable seaside sparrow (CSSS). They further concluded that ultimate protection for the species would be achieved by implementing the MWD to ENP project (PL 101-229) as quickly as possible. In the opinion of the FWS, the FWS B.O. presented a Reasonable and Prudent Alternative (RPA) to Test 7, Phase I of the Experimental Program that would avoid jeopardizing the CSSS during the interim period leading up to completion of the MWD project. The FWS RPA recommended that certain hydrologic conditions be maintained in the sparrow's breeding habitat to avoid jeopardizing the continued existence of the species. In January 2000, the Experimental Program was

terminated, and in March 2000, Test 7, Phase I was replaced by the Interim Structural and Operational Plan (ISOP) (USACE 2000). The ISOP was designed to meet the conditions of the FWS RPA included in the FWS B.O. from March 2000 until implementation of the Interim Operational Plan (IOP) in 2002. The Record of Decision (ROD) for IOP was signed in July 2002, and IOP was implemented to continue FWS RPA protective measures for the CSSS until implementation of the Combined Structural and Operational Plan (CSOP). Because of the need to have an operational plan in place prior to breeding season for the CSSS, the IOP EIS and ROD were finalized prior to completion of modeling for Alternative 7R. Pursuant to a March 14, 2006 order by the United States District Court for the Southern District of Florida, the Corps is now supplementing its 2002 IOP EIS.

1.2 Project Location

The C&SF system-wide project is located in South Florida and includes portions of several counties as well as portions of the ENP, Big Cypress National Preserve, and adjacent areas (Figure 1). The Corps' June 1992 General Design Memorandum (GDM) titled "Modified Water Deliveries to ENP," defines the project boundary as Shark River Slough and that portion of the C&SF Project north of S-331 to include Water Conservation Area 3 (WCA 3). The major project components of the MWD and C-111 projects are shown in Figure 2.

1.3 Project Purpose

On 19 February 1999, the FWS issued a Final FWS B.O. for the MWD project, Experimental Water Deliveries Program, and C-111 Project under provisions of the Endangered Species Act of 1973, as amended. The FWS B.O. concluded that continuation of Test 7, Phase I operations would cause adverse modification of CSSS critical habitat and would jeopardize the continued existence of the CSSS. Currently, six such population clusters of the CSSS are known and are distributed within the southernmost portion of the C&SF project area (Figure 3). The operating criteria for Test 7 were defined in a concurrency agreement between the Corps, ENP, and the SFWMD in October 1995. Test 7 was to be implemented in two phases. Phase I consisted of operating the structures in place at that time until Phase II structures could be completed. The ultimate goal of Test 7 was to improve the timing, volume, and location of water deliveries to ENP to more closely reflect natural pre-development flows. The FWS B.O. also concluded that ultimate protection for the CSSS would be achieved by the rapid completion and implementation of the MWD project. ISOP was designed to take the place of Test 7 until completion and implementation of the IOP. The IOP would avoid jeopardizing the CSSS during the interim period (2002 and 2009) leading up to full MWD implementation.

In the opinion of the FWS, the FWS B.O. presents a Reasonable and Prudent Alternative (RPA) to the Experimental Program that would avoid jeopardizing the CSSS. The FWS RPA recommends that the following hydrological conditions be met for protection of the CSSS: 1) A minimum of 60 consecutive days of water levels at or below 6.0 feet NGVD at NP 205 between March 1 and July 15; 2) Ensure that 30%, 45%, and 60% of required regulatory releases crossing Tamiami Trail enter ENP east of L-67 extension in 2000, 2001, and 2002, respectively, or produce hydroperiods and water levels in the vicinity of subpopulations C, E,

and F that meet or exceed those produced by the 30% , 45% , and 60% targets; and 3) Produce hydroperiods and water levels in the vicinity of subpopulations C, E, and F that equal or exceed conditions that would be produced by implementing the exact provisions of Test 7, Phase 2 operations (USACE 1995). During implementation of the ISOP, the Corps received confirmation from the FWS that producing the hydrologic equivalent of the 30%, 45%, and 60% conditions, as opposed to the actual release percentages, would also meet the FWS RPA conditions.

Alternative 7R, which has been implemented, allows the Corps to meet the FWS RPA conditions and minimize impacts to other natural and human resources, while managing the system for purposes authorized under the C&SF Project.

1.4 Related Environmental Documents

A number of actions relevant to the proposed action have been implemented since the 1983 Experimental Program was authorized. The following list identifies milestones leading up to the proposed action. Some of the key environmental documents relevant to the proposed action are the Final ISOP EA, Final SEIS on the 8.5 SMA and Test 7 Summary. The Final Environmental Assessment (EA) for the ISOP was issued in March 2000. The Corps is currently operating under the IOP. A critical component to implementing the actions recommended in the FWS B.O. is the protection of the 8.5 Square Mile Area (SMA), a residential area located to the east of Northeast Shark River Slough (NESRS). A Final SEIS was prepared and coordinated in August 2000 for implementation of a preferred alternative that consists of perimeter and interior levees as well as a seepage canal. A new proposed pumping structure (S-357) located at the southern terminus of the seepage canal would discharge seepage water into a treatment area located south of Richmond Drive in the C-111 project area. The ROD for the 8.5 SMA SEIS was signed on December 6, 2000. After Legislative reconsideration and re-authorization of Alternative 6 for the 8.5 SMA in 2003, a second ROD, identifying Alt 6 as the selected plan, was signed in 2003. Flood mitigation features of 8.5 SMA are under construction, and expected to be complete in 2007.

As part of the interagency agreement that accompanied approval of Test Iteration 7 of the Experimental Program of Water Deliveries to ENP, the Corps participated in a monitoring program to determine the ecological and hydrologic benefits of the program. The monitoring program evaluated changes in hydrologic conditions beginning in November 1995 through May 2000. In addition, ecological factors that included freshwater fish and macroinvertebrates; mangrove resident fish; wading birds; CSSS; and American crocodile were monitored to determine the effects of the Test 7 Experimental Program on natural resources in the ENP.

At the December 17, 1999 emergency meeting of the SFWMD Governing Board, the Corps presented the ISOP, which was prepared to modify hydrologic conditions in ENP to avoid jeopardizing the CSSS. In a letter to the Corps dated January 20, 2000, the SFWMD stated:

“The ISOP explicitly represents a departure from Test Iteration 7 of the Experimental Program of Water Deliveries to Everglades National Park operating criteria: consequently, the three-party concurrency agreement established for Test Iteration 7 cannot adequately facilitate

implementation of the ISOP. Based upon your briefing that the requirements of the biological opinion for the CSSS now supercede the management objectives of the Experimental Program, we realize the Experimental Program has been effectively terminated.”

Date	Action
1983	Authorization of the Experimental Program
1989	ENP Protection and Expansion Act of 1989
1990	Draft General Design Memorandum (GDM) on Modified Water Deliveries
1990	Biological Opinion on Modified Water Deliveries
1992	Final GDM on Modified Water Deliveries
1993	Implement Test 6 of the Experimental Program
1994	C-111 General Reevaluation Report
1995	Biological Opinion Test 6, Experimental Program
1995	Extension of Test 6
1995	Implement Test 7, Phase I of the Experimental Program
1995	Initiate Test 7 Hydrologic and Ecological Monitoring
1997	FWS Request Corps to reinitiate Section 7 consultation
1998	Implement 1998 Emergency Deviation from Test 7, Phase I
1999	BO on the Experimental Program, Modified Water Deliveries, and C-111 Project
1999	Implement Emergency Deviation from Test 7, Phase I
2000	Implement ISOP 2000 Emergency Deviation
2000	8.5 SMA Plan Final SEIS and ROD
2001	Completion of Test 7 Hydrologic and Ecological Monitoring Report
2001	Implementation of ISOP 2001 Emergency Deviation
2001	Draft EIS for the IOP for Protection of the Cape Sable Seaside Sparrow
2001	Supplemental Draft for the IOP for Protection of the Cape Sable Seaside Sparrow
2002	Final EIS for the IOP for Protection of the Cape Sable Seaside Sparrow
2002	ROD for the IOP for Protection of the Cape Sable Seaside Sparrow
2003	8.5 SMA Plan 2 nd ROD for Alt 6D
2005	Final Revised GRR and SEIS for Tamiami Trail Modifications

At that point, Test Iteration 7 of the Experimental Program was terminated and replaced by the ISOP. An EA was prepared for ISOP 2000, which provided a plan for operations to meet the requirements of the B.O. during 2000. ISOP 2001 provided for operations of water deliveries to the ENP until it was replaced in August 2002.

The Corps issued a Draft EIS for the IOP for the Protection of the Cape Sable Seaside Sparrow in February 2001, which assessed six alternatives. Due to the number of issues which were still unresolved after public coordination of the DEIS, the Corps was directed by CEQ to work collaboratively with the various agencies to formulate a consensus plan which would meet the B.O. requirements while satisfying other authorized C&SF Project purposes. At the suggestion of the President’s Council on Environmental Quality (CEQ), the Corps engaged the services of the U.S. Institute for Environmental Conflict Resolution (IECR) to facilitate the development of an improved plan to address the FWS’ concerns. A number of facilitated meetings and teleconferences were held between the FWS, ENP, and the South Florida Water Management District (SFWMD) from May through August 2001, to resolve issues regarding the IOP. As a result of this process, an additional alternative (Alternative 7)

was developed for review under the NEPA process, and a Supplemental DEIS was issued in October 2001.

During the review process and based on letters from various stakeholders, it was decided to further develop Alternative 7 to provide additional flood control capacity because it appeared that Alternative 7 might result in an increased risk of flooding in agricultural areas located east of the L-31 levee in comparison to present conditions. The Corps, in consultation with the FWS, ENP, and the SFWMD, determined that construction of previously authorized components of the MWD and C-111 projects would provide flexibility to the system operations to maintain current flood protection capacity, although modeling results for the modified Alternative 7 were not complete, and the preferred alternative evaluated in the Supplemental DEIS, Alternative 7, was adjusted to utilize these components. The modified alternative, Alternative 7R, was identified as the recommended plan in the Final EIS. A ROD was signed in July 2002 selecting Alternative 7R as the IOP, which was implemented in August 2002.

The decision to implement IOP was challenged in court, and on May 14, 2006, the Corps was ordered to supplement its IOP EIS.

1.5 Scoping

A Notice of Intent (NOI) to prepare a SDEIS for the IOP was published in the Federal Register on May 5, 2006. A Scoping Letter was issued to various stakeholders and interested parties on May 10, 2006 and comments were received through June 10, 2006. Four comments were received from private individuals during Scoping. Copies of the Scoping documents, comment letters, and mailing list are included in Appendix A.

1.6 Decision to be Made

The Corps is considering whether to continue operations under Alternative 7R or whether to implement another alternative.

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2.0 ALTERNATIVES

2.1 Background

Under the SEIS, the Corps is considering the previously identified alternatives which were developed by the Corps with input from FWS, FFWCC, ENP, SFWMD, DERM, FDEP, and FDACS.

RPA Hydrologic Condition Requirements

As discussed in the 2002 EIS, the FWS B.O. has specific RPA requirements for western and eastern habitats of the CSSS for years 2000, 2001 and 2002. For the western habitat, it stated that the Corps must prevent water levels at NP-205 from exceeding 6.0 feet NGVD for a minimum of 60 consecutive days between March 1 and July 15. For the eastern habitat, the B.O. requires that the Corps must implement actions that would produce hydroperiods and water level in the vicinity of CSSS subpopulations C, E, and F, equal to or greater than those that would be produced by implementing the exact provisions of Test 7 Phase II. In addition, it specified that the Corps must provide at least 30, 45, and 60 percent of all regulatory water releases crossing Tamiami Trail enter ENP east of the L-67 Extension in 2000, 2001, and 2002, respectively.

With these RPA requirements, the Corps developed RPA100, RPA101, and RPA102 model runs to represent the conditions required by the B.O. for 2000, 2001 and 2002. These RPAs were replaced by RPA00, RPA01, and RPA02 because of improved operations of S-12 structures, the use of S-355A&B, and adjustment to WCA 2 and WCA 3A regulation schedules. Operational assumptions used in the modeling of these RPAs are listed in Table 2.2.

2.2. Description of Alternatives

Six plans were evaluated in the 2002 EIS, and Alternative 7R was selected. Alternative 7R was an improvement of Alternative 7, which includes operation of components of previously approved C-111 and MWD projects to provide additional operational flexibility and was included in the FEIS in 2002. In addition, descriptions and operational components of the ISOP 2000 and ISOP 2001 plans were provided for comparison in the SDEIS (Tables 2.2 and 2.3, respectively). The ISOP 2000 and ISOP 2001 were included to provide a basis of comparison as well as to include an analysis of these plans in the EIS.

2.2.1 Alternative 1

Alternative 1 (also known as ISOP9dR) represents the model run for ISOP 2001. The goal of Alternative 1 is to meet the RPA requirements for 2001. The plan is to provide water levels at NP-205 below 6.0 feet NGVD for a minimum of 60-consecutive days between March 1 and

July 15; and at the same time, produce hydrologic equivalence to the RPA hydroperiods that would be produced by implementing Test 7 Phase II in SDCS and discharging increasing percentages of all regulatory releases crossing Tamiami Trail to enter ENP east of the L-67 Extension. Operational assumptions used in the modeling of Alternative 1 are listed in Table 2.4. Modeling results that indicate Alternative 1 meets and exceeds the RPA hydroperiod requirements for the eastern sparrow habitat, specifically under the hydroperiod frequencies performance measure. The operational plan for Alternative 1 is described as follows.

In Alternative 1, basic water management operations for flood control and water supply in SDCS have not changed significantly from 95Base (Test 7 Phase I). Canal levels in the northern reach of L-31N, from S-331 up to S-334, L-30, from S-335 to S-337, and C-4 are unaffected by operational changes in this alternative. The new components that set Alternative 1 apart from 95Base (Test 7 Phase I) are the regulation schedule deviation for WCA 3A; closure dates for the S-12A, S-12B, S-12C, S-343A, S-343B, and S-344; two new pump stations, S-332B and S-332D; and lower canal levels along the L-31N reach between S-331 and S-176.

To meet the requirement for ensuring that water level stays at or below 6.0 ft NGVD at Gage NP-205 for at least 60-consecutive days, the Corps determined through regional modeling that staggered closures at S-343A&B, S-344, and S-12A, S-12B, and S-12C starting on November 1 through February 1 and returning these structures to normal operation after July 15 would maximize the potential for nesting success for sparrow sub-population A. Gage NP-205 is located in the western marl prairies and is the key station for monitoring water levels in the Western Shark River Slough.

To achieve the hydrologic equivalence to the hydroperiods required by the FWS B.O. for the eastern marl prairies (sparrow sub-population C, E, and F habitats) and at the same time, maintain C&SF project goals and responsibilities, the Corps proposed to route regulatory releases from WCA 3A, that normally would be discharged directly through the western structures, through S-333 and S-334 structures, down L-31N canal, and into a 160-acre seepage reservoir through S-332B pump. According to the regional modeling using SFWMM, when capacity is available S-332B must be pumped up to 325 cfs in order to meet the RPA requirements. The routing of WCA 3A waters through SDCS would require the lowering of L-31N canal from S-331 to S-176 and maximizing excess discharges to tide.

2.2.2 Alternative 2

Alternative 2 (Table 2.5) was developed to further improve conditions in the eastern sparrow populations over those under Alternative 1, while also improving environmental conditions within other affected regions of the project area. It was decided that IOP alternatives must be formulated in two phases; Phase 1 of Alternative 2 would be in effect prior to the completion of the 8.5 SMA Project; and Phase 2 would take effect once construction of the 8.5 SMA was completed. For the modeling of the IOP, it was assumed that as a result of the implementation of the 8.5 SMA solution, the G-3273 trigger was no longer in effect.

Phase 1 of Alternative 2 (IOP 2b) differs from Alternative 1 in the following ways. IOP 2b includes a deviation to the WCA 2A regulation schedule; the S-343 A/B and S-344 structures would close two months later on January 1; S-12A would close one month later on December 1; S-12D would close from February 1 to July 15; the schedule for S-333 would vary; and in pumping schedules for S-332B and S-332D.

Phase 2 of Alternative 2 (IOP 2) differs from Alternative 1 by: allowing S-333 to deliver water to NESRS via L-29 at a rate up to its structural capacity when the G-3273 gage is higher than 6.8 feet; close the S-334 structure during regulatory releases from S-333; and incorporate the same changes as Phase 1 (IOP 2b) at S-332B and S-176.

2.2.3 Alternative 3

Alternative 3 (Table 2.6) also has two phases for the same purpose as Alternative 2, with Phase 1 being implemented prior to the 8.5 SMA Project completion and Phase 2 implemented after completion of 8.5 SMA Project.

Phase 1 of Alternative 3 (IOP 2a) is similar to Phase 2 of Alternative 2 (IOP 2) with one exception; S-333 would be closed when the G-3273 gage is higher than 6.8 feet. Phase 2 of Alternative 3 (IOP 2) is the same as Phase 2 for Alternative 2.

2.2.4 Alternative 4

Alternative 4 (Table 2.7) (IOP 3 and IOP 3a) is also implemented in two phases and is similar to Alternative 2 (IOP 2 and IOP 2a) with the exception that the S-12 structures A, B, C, and D and the S-343/S-344 structures would be closed earlier in the year, from November 1 through July 15. IOP 3a would be implemented as Phase 1 and IOP 3 would be implemented as Phase 2.

2.2.5 Alternative 5

Alternative 5 (Table 2.8) (IOP 4a and IOP 4) resembles Alternative 1 to a greater degree than do either Alternative 2 or Alternative 3 since this alternative was developed after ISOP 9dR was produced. Alternative 5 (Phase 1) and Alternative 1 alternative differ only regarding the S-332B pumping schedule and the S-176 schedule. Phase 2 also includes the removal of the G-3273 trigger.

2.2.6 Alternative 6

Alternative 6 (Table 2.9) is identical to Alternative 5 with two exceptions: an additional 240 acre seepage reservoir was added with weir overflow designed to flow back into L-31N canal and maximum pumping is limited to 250 cfs at S-332B pump station (Figure 4). The purpose of adding a new 240-acre reservoir is to minimize direct weir overflow into the ENP. By reducing pumping from 325 cfs to 250 cfs, potential weir overflow would be reduced.

According to the regional modeling from SFWMM version 3.8, pumping up to 250 cfs at S-332B would still meet and exceed RPA hydroperiod requirements for sub-populations E and F. The size of the first seepage reservoir is approximately 160 acres. Field data suggests that in the dry season, the existing 160-acre seepage reservoir can seep up to 190 cfs, and in the wet season, the seepage rate is reduced to about 120 cfs. Based on this field data and limited and preliminary sub-regional modeling, the combined 400-acre seepage reservoir was projected to be able to seep over 250 cfs of discharge from S-332B without direct weir overflow into the park from normal operations. Once the new seepage reservoir was built, a more accurate rate of seepage would be obtained. The additional seepage reservoir location was north of the current seepage reservoir. It was designed with overflow weir on the east side to allow for potential overflow back into L-31N canal. Although the existing seepage reservoir could be affected by the combined operation at these two seepage reservoirs, the north-south orientation of the new reservoir would be more conducive to seepage to the ENP. Furthermore, the depth of the new reservoir is more than twice that of the existing reservoir. A table comparing SFWMM cell size and the current and proposed seepage reservoirs is shown below.

	Area (acres)
2 mile x 2 mile cell	2,560
1 st Seepage reservoir	160
2 nd Seepage reservoir	240

The seepage reservoirs were not modeled explicitly because of the limitation of the SFWMM version 3.8. However the amount of water being delivered to the modeled cell is correct. According to the model algorithm, SFWMM basically spreads inflow from S-332B pump over an entire grid cell. In terms of evaluating long-term hydrologic impacts associated with overland flow, the model is an appropriate tool to use in the determination of water management operations that would produce hydroperiods that would meet the RPA requirements. Modeling results indicate that Alternative 6 would meet and exceed the RPA hydroperiod requirements for the eastern sparrow habitat. Detailed operational assumptions used in the regional water management modeling of Alternative 6 are listed in Table 2.9.

2.2.7 Alternative 7

Alternative 7 (Table 2.10) represents the IOP consensus proposal from the Corps, ENP, USFWS, and SFWMD collaborative process. Its most important feature that sets it apart from other alternatives is the dual mode of water management operations. In addition, Alternative 7 has three structural modifications.

Dual Mode of Operations

The dual mode of operations was derived by recognizing some fundamental operational issues in the plan. When the S-12 operations are reduced in order to decrease impacts to the western Cape Sable seaside sparrow habitats, the potential exists to increase water levels in WCA3A. The ISOP addressed this by moving some of the regulatory releases that cannot be passed

through S-12D into the South Dade Conveyance System via the L-29 borrow canal rather than directly onto western sparrow habitats. In order to mitigate for the increased inflow to the South Dade Conveyance System, the ISOP canal stages in the South Dade Conveyance System are lowered relative to Test 7 Phase I of the Experimental Water Deliveries. However, in the ISOP, these mitigation actions are implemented regardless of whether or not flow from WCA3A is entering the South Dade Conveyance System. According to the Department of the Interior (Coordination Act Report, p.126-129), these continuously lowered canal stages adversely impacted wetlands near L-31N. Alternative 7 addresses this concern by mitigating for the increased flow into the South Dade Conveyance System only when that action is occurring. This operational philosophy results in the operational rule set in Table 2.10.

The first mode of the operation rule set of Alternative 7 is designated as “No WCA 3A regulatory releases to SDCS” operation. During these times, the L-31N canal would be maintained at Test 7 Phase I level when there are no WCA 3A regulatory releases. This operation was proposed to address the concern from DOI that maintaining L-31N canal at ISOP level would impact Park resources in NESRS.

The second set of operational rules which would apply when water is flowing from WCA 3A down and around the SDCS is called "WCA 3A regulatory releases to SDCS." During this operational phase, levels in L-31N canal would be lowered to minimize potential flood impacts in SDCS and at the same time, provide necessary downstream gradient to move some of WCA 3A regulatory releases through S-333/S-334, down through L-31N canal and to the S-332B pump station. The purpose of routing of regulatory releases from WCA 3A to S-332B seepage reservoir is to produce the hydrologic equivalence to the RPA hydroperiods in the habitats of sparrow sub-populations C, E and F to provide adequate hydration in these habitats until MWD is operational. Because the SFWMM cannot simultaneously simulate two different modes of water management operations that depend on hydrologic conditions in WCA 3A, Alternative 7 was modeled in two separate runs. Hence the model run simulating the "No WCA 3A regulatory releases to SDCS" is ALT7a and the "WCA 3A regulatory releases to SDCS" is ALT7b.

New Structural Features

Three structural modifications in Alternative 7 are degrading the lower 4 miles of the L-67 extension levee, and constructing an additional 240-acre seepage reservoir at S-332B.

The degradation of the lower 4 miles of L-67 extension levee would allow water from Northeast Shark River Slough (NESRS) to flow into the northern part of Shark River Slough (NESRS) and northern habitat area of sparrow sub-population E. According to the DOI, degrading the lower section of L-67 Extension would enhance hydroperiods in CSSS sub-population E and water flows and volumes in Shark Slough and the Shark Slough estuaries. Various lengths of the degradation were proposed and only 2, 4, and 6-mile sections were evaluated. Degrading a four-mile section was selected based on the results of the modeling that show a potential hydroperiod improvement in the western part of NESRS with minimum impact to ground water level in and around 8.5 SMA.

Building an additional seepage reservoir of 240 acres at S-332B would avoid direct overflow into the Everglades National Park (Figure 4). The current seepage reservoir (in 2002) was about 160 acres and had an average seepage rate of about 120 cfs during the wet season and about 190 cfs during the dry season. Cumulatively, both the existing 160-acre seepage reservoir and the new 240-acre detention (total of 400 acres) are 2.5 times larger than the existing seepage reservoir. Additionally, the new seepage reservoir is more than twice as deep as the original reservoir. Therefore, it is reasonable to estimate that the combined seepage reservoirs of 400 acres would seep at least 250 cfs more than the amount needed to meet the RPA targets without direct weir overflow. In addition, the new seepage reservoir weir would be constructed to overflow to the east, not into the ENP. Therefore, with the additional seepage reservoir and the reduction of pumping at S-332B from 325 cfs to 250 cfs, the potential for and frequency of weir overflow into the Park during normal operations would be significantly reduced. Overflow into the Park under pre-storm/storm/storm recovery operation would depend on several factors whose recurrence frequency cannot be predicted reliably. These factors are:

- Rainfall recurrence probability;
- Antecedent stages in canals;
- Groundwater or surface water levels;
- Antecedent rainfall.

Although the Corps can estimate the recurrence frequency of a given rainfall event based on long term meteorological records, it cannot predict the other three conditions with confidence. Therefore, it is difficult to project the frequency or duration of such overflow events. However, during the 31 year period of record, there were 44 tropical storms that could have triggered the pre-storm operations, but only if other antecedent conditions were appropriate. The pre-storm operation was not modeled in the regional simulation of Alternative 7a and 7b but the modeling results indicate that during the 31 year period of record, the L-31N canal stage above S-174 would exceed 5.1 feet 2% of the time, at which time S-332B would be triggered to pump up to 500 cfs causing weir overflow into the Park.

The current S-333 structure can pass 1,350 cfs. No modifications to the structure are currently anticipated. The operational constraints are still the 6.8 feet NGVD trigger at G-3273 and 9.0 feet NGVD canal level in L-29. However, the 6.8 foot level at G-3273 tends to override the 9.0 foot canal level in L-29. The highest level reached in the canal was 7.92 feet NGVD on June 20, 2005. Detailed operational assumptions used in the water management simulation of ALT7a and ALT7b are shown in Table 2.10.

As an integral part of IOP Alternative 7, S-335 would continue its primary function as a supplemental water deliveries structure with no change in operational triggers from Test 7 Phase I of the Experimental Water Deliveries Program except when making S-151 regulatory releases; this operational decision should be based on first meeting the priority given to S-334 and then matching flow through S-335 with inflows from S-151 and S-337. Stage and flow hydrographs at S-335 for period of record from January 1984 to June 2001 are shown page A-93 of the SDEIS Engineering Appendix. From reviewing and analyzing these hydrographs,

the interagency team recognized that capacity for flow from S-335 into SDCS has not increased and concluded that any change in capacity would be designated for routing WCA 3A regulatory releases.

2.2.8 Alternative 7R

Because Alternative 7R is the current operational plan, implemented after the ROD was signed in 2002, it is the default No Action alternative. Alternative 7R (Table 2.11) evolved to overcome concerns regarding Alternative 7. Alternative 7, while trying to meet environmental objectives, still has the primary goal of routing regulatory releases from WCA 3A through SDCS to the sparrow habitats on the eastern side of the ENP. Even though the regional modeling for South Florida is limited to a single mode of operation, Alternative 7 had to be simulated in two separate simulations to bracket the range of hydrological impacts to WCAs, ENP, and SDCS.

As a result of discussions on addressing the comments received regarding IOP Alternative 7, the agency principals agreed to recommend an action plan that would incorporate adaptive management, planning-to-construction engineering, and flexible water management operations. The key element that would allow this new method of solving problems in South Florida would required the construction of S-356 pump station of MWD project and the S-332C seepage reservoir of the C-111 project. The S-356 pump station was built at the exact location specified in MWD General Design Memorandum. Its primary function in this IOP is to collect seepage in L-31N canal north of G-211 and discharge it into L-29 canal only when G-3273 is below 6.8 feet NGVD. This seepage management plan would reduce flooding impacts to South Dade agricultural and urban areas due to the movement of seepage water from the ENP into L-31N canal. In addition, the agricultural stakeholders expressed a desire to continue the use of S-356 when G-3273 is above 6.8 feet NGVD. This poses as a problem to the residents of 8.5 SMA because when G-3273 is above 6.8 feet NGVD, any additional water added to L-29 could adversely affect the area.

“Mod Waters” Features

Two features previously developed as part of the “Mod Waters” project are important components of the IOP plan: the S-356 pump station and degradation of the lower 4 miles of the L-67 extension levee. These components were described in the 1992 GDM for Mod Waters. The S-356 pump station was designed to pump water from the L-31N canal into the L-29 canal, thereby returning seepage water that would have entered L-31N from Park lands west of L-31N from L-29 southward to the flood mitigation area. Higher stages in NESRS would increase seepage into the L-31N canal, adversely affecting flood control in the adjacent basin and downstream. The S-356 pump station was designed to maintain the L-31N canal reach from Tamiami Trail south to the S-331 pump station. S-356 was initially designed to pump up to 988 cfs, because it would also have moved drainage water from the 8.5 SMA area up L-31N and west into L-29 canal to NESRS. The 1992 Mod Waters GDM visualized, under the 1992 selected Plan, utilizing S-356 to draw water pumped from the 8.5 SMA by S-357 into the L-31N canal, from where it could be pumped by S-356 back into L-29 Canal and the NESRS south of Tamiami Trail. After relocation of the 8.5 SMA S-357 pump station to a

site south of Richmond drive, with drainage of 8.5 SMA seepage water to the south, the remaining capacity or need was estimated to be reduced to 500 cfs.

Under Mod Waters it was proposed to degrade a section of the L-67 extension levee to allow free flow of water from Western SRS into NESRS. This would restore full interaction between Western SRS and NESRS, restoring the area to a more natural state^[U1]

For IOP, S-356 would collect seepage from ENP along the reach of the L-31N canal that extends from structures S-335 to G-211, by pumping water west into L-29 borrow canal and NESRS when conditions permit. The groundwater gradient in this area is predominately from NESRS towards the east. To ensure urban stormwater would not be pulled in from the east (C-4 basin) by the S-356 into ENP, its operation would be limited to times when the G-211, S-336, S-335, etc. are closed. During modeling for IOP, only a capacity of 500 cfs was determined necessary. The function of the S-356 pump station under IOP is consistent with the authorized purpose of managing seepage into the reach of L-31N from Tamiami Trail to the S-331 structure.

The degradation of the lower 4 miles of L-67 extension levee would allow water from western Shark River Slough (SRS) to flow into the northeastern part of Shark River Slough (NESRS) and northern habitat area of sparrow sub-population E. According to the DOI, degrading the lower section of L-67 Extension would enhance hydroperiods in CSSS sub-population E and water flows and volumes in Shark Slough and the Shark Slough estuaries. Various lengths of the degradation were proposed and 2, 4, and 6-mile sections were evaluated. Degrading a four-mile section was selected based on the results of the modeling that show a potential hydroperiod improvement in the western part of NESRS with minimum impact to ground water levels in and around 8.5 SMA.

Current Status of the “Mod Waters” Components

The S-356 pump station was built at the exact location specified in MWD General Design Memorandum. The Corps initially applied for operational authorization from the FDEP to operate the S-356 pump station. FDEP responded with a draft request (December 2002) for additional information (RAI) primarily concerned with hydrology issues. The draft RAI resulted in a series of ongoing technical discussions concerning the S-356 operations, and the proposed operations table was revised to address most of the water source concerns identified in the draft FDEP RAI. The proposed operational adjustments conceptually addressed most of the DOI concerns about water quality, but FDEP required reasonable assurance that water quality conditions would not be degraded by the operation of the S-356 pump station. The concern is that over-pumping (beyond recycling ENP/WCA seepage water) of the S-356 could draw urban runoff water from the east into the relatively pristine ENP. Tests of the S-356 pump station are necessary during the wet season to refine and/or confirm the effectiveness of the proposed operational constraints to ensure that undesirable (water quality standpoint) urban runoff water or ground water is not drawn into the S-356 and subsequently discharged into the ENP. Wet season pump tests cannot be conducted until the 8.5 SMA flood mitigation feature is constructed and operational. Until that time, some dry season tests will be conducted to gain more information on this issue. Dry season tests cannot provide the

reasonable assurance necessary for FDEP to issue operational WQC but will provide other useful information concerning the operation of this pump station.

A proposed water quality monitoring plan has been coordinated with FDEP for a pump test with S-356 to proceed with a dry season test. Changes to the proposed operational pump test regime will require re-consultation with the FDEP on the WQ monitoring plan.

Since early 2005, there have been several attempts to perform an S-356 pump test. The latest attempt (3rd) is currently being coordinated. The following is the proposed S-356 pump test detailed plan. In addition, it contains the USFWS guidelines to be used in order to minimize the impact to wood storks, which are listed as an Endangered Species.

Proposed S-356 Pumping Test (Draft 2/22/06)

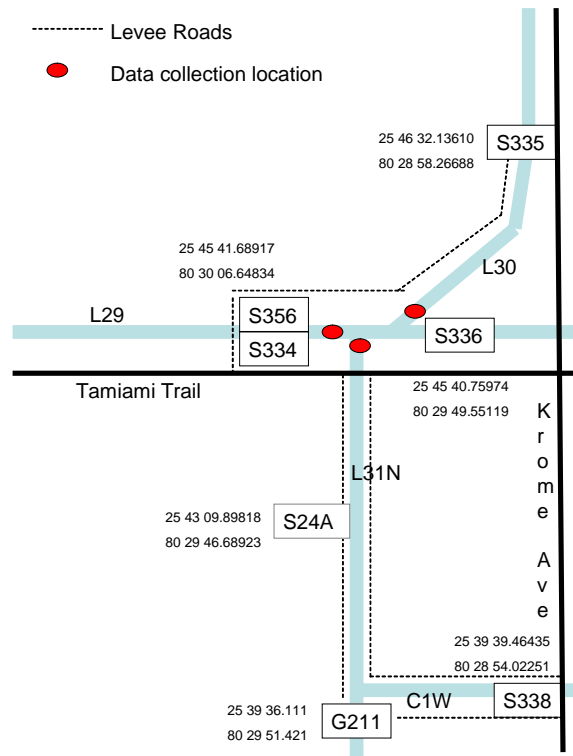
Test Objectives: The primary objective of the test is to acquire hydrologic and water quality data to support consensus of the team that S-356 can be operated consistent with the operations stated in IOP EIS. The S-356 operations were to capture and return seepage from NESRS associated with IOP operations. If this objective can not be achieved a secondary objective would be to acquire sufficient hydrologic data to formulate a series of test to derive operations for S-356 consistent with the original IOP intent to implement until the completion of CSOP. This would be achieved through the following:

- a. Observe the drawdown and flow rate in L-31N associated with S-356 operations.
- b. Compare results with the previous L-31N drawdown test, which utilized S-331 as the control feature, located south of G-211.
- c. Observe the response in the L-29 canal levels to the S-356 pump test.
- d. Through detailed water budgets, characterize inflows along L-31N from the natural areas to the west and developed lands to the east.
- e. Provide water quality characterization to identify phosphorus load content under S-356 operations (specifically contribution from coastal structures).
- f. Gather hydrologic and water quality data.

Test Description: The test will be conducted by utilizing S-356 pump station as the control feature. The test would involve water control features S-333, S-334, S-335, S-336, S-380, S-338, G-211, S-356, S-355A, S-355B located along L-29, L-30 and L-31N. Stream gaging data at selected areas adjacent to the junction of L-29, L-30 and L-31N will be recorded for analysis. Continuous coordination will occur between SFWMD, ENP, FWS, FDEP, and USACE for the entire testing period. A conference call number will be setup for use on a daily basis or as needed. This test can be terminated at any time as determined by the team.

Background: In accordance with IOP, a technical team is responsible for evaluating S-356 pumping limits and operations.

In addition, an L-31N drawdown test was performed in May 2004. One of the test objectives was to determine the total seepage from ENP into the L-31N canal between Tamiami Trail and S-331. The section between Tamiami Trail and the G-211 structure was the main focus. S-331 pump station was the control feature. Based upon the May 2004 L-31N drawdown test, it is acknowledged that the area adjacent to S-356 has the highest transmissivity.



Proposed Operations (Contractor can be at S-356 within 2 hours of notification):

1st day:

- Close S-333, S-334, S-335, S-336, S-338, S-380, and G-211. The intent is to create a closed system in both, L-29 and L-31N.
- S-355A and S-355B may remain open for the duration of the test, while maintaining inflows to WCA-3B through the combination of S-151 and S-31 operations.
- Begin S-356 pumping operations by starting 1 diesel pump (125 cfs).
- Wait no more than one hour and start a second diesel pump (250cfs)*.
- Wait no more than one hour and start a third diesel pump (375 cfs)*.
- Wait no more than one hour and start a fourth diesel pump (500cfs)*.
- Maintain constant pumping for 24 hrs.

- L-29 stage will be monitored continuously to avoid levels go above 8.0 feet-NGVD.

2nd day:

- Continue to monitor stages and constraints. Maintain constant pumping for 24 hrs*.

3rd & 4th day:

- Continue to monitor stages and constraints. Maintain constant pumping for 24 hrs*.

5th day:

- Bring back the L-29 canal stage to its original conditions. Normal operations on all structures should resume, accordingly.

Constraints:

- Minimum elevation of 4.5 feet-NGVD as measured at G-211 headwater.
- G-3273 must be below 6.8 feet-NGVD

NOTES:

*** Do not start an additional pump should levels in L-31N recede to 4.5 feet-NGVD or below as measured at G-211 headwater. Water releases via S-335 may be necessary to stabilize water levels in L-31N.**

C-111 Features

The C-111 project modifications were authorized as an addition to the C&SF project in WRDA 1996 to protect the natural values associated with ENP while maintaining flood damage prevention within the C-111 basin, east of L-31N and C-111. The authorized plan outlined in the 1994 C-111 GRR consisted of both structural and non-structural components. Non-structural components of the plan included acquisition of over 11,866 acres of land within the Frog Pond and Rocky Glades areas. Structural components of the plan consisted of the construction or modification of 9 canals, construction of a continuous detention/retention area to be constructed along the L-31 canal along with a series of pump stations. The 1994 plan included a detention/retention area that would be utilized for temporary storage of excess flood water before discharge to Taylor Slough. The S-332 series of pump stations (S-332 @ 165 cfs and the S-332A, B C and D @ 300 cfs capacity each) would pump into the detention/retention area which lies between the agricultural areas on the east and the ENP on the west. A battery of culverts and an overflow spillway were to be constructed along the western levee of the detention/retention area. Pumping of water into the detention/retention area would reduce the slope of the groundwater gradient from the high water conditions within ENP and the L-31N canal, thereby reducing seepage losses from the adjacent wetlands within ENP and provide for higher stages and longer hydroperiods in the area north of Taylor Slough and the Rocky Glades area west of L-31N. The re-direction of water to Taylor Slough through the detention/retention area was also designed to reduce damaging discharges through the S-176 structure to the lower C-111 and out to tide at Barnes Sound. The C-111 plan included other project features to improve conditions in Taylor Slough and the eastern panhandle of ENP such as replacement of the bridge over Taylor Slough within ENP,

extension of the L-31W borrow canal from C-111 to S-332, plugging of canals C-109 and C-110, and the removal of the C-111 canal spoil mounds along its most southerly reach.

Construction of the C-111 project modifications has been underway since the initial authorization in 1996 in accordance with the pace of authorized land acquisition required for the project and funding from Congress. The Taylor Slough Bridge replacement was the first feature constructed. The bridge replacement was designed to achieve a more even spatial distribution of the increased water flow to Taylor Slough to be provided by the C-111 project modifications (S-332 series of pump stations). Removal of the C-111 spoil mounds was subsequently completed to allow water to overflow the canal bank in the panhandle area and contribute towards reductions in the frequency of S-197 openings. Backfilling of the C-109 was accomplished by the Florida Department of Transportation as mitigation for their widening of US-1.

The total pumping capacity associated with the 1994 C-111 GRR recommended plan for the detention/retention area was 1,365 cfs (300 cfs @ S-332A, B, C, D, and 165 cfs @ S-332). The 1994 C-111 GRR recommended the development of an operational plan for Shark River Slough and Taylor Slough as part of the Experimental Program. Construction of the 500 cfs capacity S-332 D pump station was completed during Test 7 of the Experimental Program to provide increased water flows to Taylor Slough and reduce discharges to the lower C-111. The capacity of this pump station was increased from 300 cfs to 500 cfs to maintain the 500 cfs flood conveyance capacity of the L-31W canal given that downstream seepage limits the operation of the S-174 structure below its full capacity. The approved design modification associated with the S-332D pump station increased the total capacity to 1,565 cfs (300 cfs @ S-332 A, B and C, 500 cfs @ S-332D and 165 cfs @ S-165). Due to the authorized modification of the MWD 8.5 SMA project re-directing seepage collected by the S-357 pump station south into the C-111 project detention area, the S-332B and C pump stations are recommended to increase in capacity from 300 cfs each to 575 cfs each in conjunction with the elimination of the 300-cfs capacity of pump station S-332A and elimination of the use of the 165 cfs capacity at S-332. This results in a total capacity of 1,650 cfs (575 cfs @ S-332B and C, 500 cfs @ S-332D).

The S-332B pump station and its west reservoir were built as part of the Interim Structural and Operational Plan (ISOP), the precursor of the current IOP plan.

Construction of the C-111 detention/retention area reservoirs on all available lands that had been acquired for the C-111 project was accelerated in 2002 to provide for increased capability to maintain flood control in the C-111 basin in conjunction with the operational changes for protection of the CSSS included in Alternative 7R (IOP) (Figure 4a). The increased capability is provided by the S-332 B and S-332C pump stations and associated seepage reservoirs along the L-31N Canal to lower canal and groundwater levels. The pump stations draw water out of the canal, thus lowering adjacent groundwater levels. The water is pumped into reservoirs along the eastern boundary of the Park. Some of the pumped water would return to the canal, but there is expected to be a net gain in lowering canal stages. During non-storm conditions, the pump stations would be operated at reduced capacity to maintain a water depth in the reservoirs necessary to create a continuous hydraulic ridge along

the Park boundary for seepage control. This hydraulic ridge concept was developed in the authorized C-111 project and use of the C-111 project features in this manner under Alternative 7R are consistent with the C-111 authorized project design and purposes.

Under IOP Alt. 7R, the Corps would build the following C-111 features: one new pump station (S-332C) and three new seepage reservoirs. Operation of these features proposed by the principals of the agencies were included to mitigate for any potential flooding impacts due to higher canal levels in IOP compared to those in ISOP or any water quality concerns associated with direct discharges of flood water into the Park from pre-storm/storm/storm recovery management operations. The construction and operation of these structures would be conducted in phases with built-in real-time monitoring and intensive computer modeling to ensure that current flood control capability would not be reduced or no further degradation to the natural resources in the Everglades National Park would occur.

Alternative 7, described in the supplemental draft EIS published in October 2001, was improved to include operation of MWD and C-111 features and is now known as IOP Alternative 7R or the recommended plan (Figure 5). In the actual implementation of IOP Alternative 7R, any future unintended consequences or unforeseen negative impacts to current flood control capability, cultural resources in WCA 3A, or natural resources of the Everglades National Park would be mitigated or addressed with vigorous adaptive management that includes, but is not restricted to, unrestricted flow and exchange of field data, modeling information, and real-time operational strategy among the agencies.

The Chairman of the Miccosukee Tribe of Indians of South Florida or his designated representatives, would monitor the conditions in WCA3A and other tribal lands and predicted rainfall. If the Tribe determines these conditions indicate jeopardy to the health or safety of the Tribe, the Chairman would make a recommendation to the Corps to change the operations of the S-12 structures or other parts of the system. The Corps would review the data, advise appropriate agencies of the conditions, and the District Commander would personally consult with the Chairman prior to making a decision whether to implement changes to the S-12 operations.

In Alternative 7R, pre-storm drawdown would be similar to Alternative 7, except for operations related to other than named events. For those events, the SFWMD would monitor antecedent conditions, groundwater levels and rainfall. If these conditions indicated a strong likelihood of flooding, SFWMD would make a recommendation to the Corps to initiate pre-storm drawdown or otherwise alter system-wide operations from those contained in the Table 2.11.

Marsh Operations

One of the operational features developed during the IOP plan formulation process and included in Alternative 7R is what is now referred to as “marsh operations” and specifically defines operating parameters for the S-332B North and West seepage reservoirs, the S-332C seepage reservoir, the S-332B/S-332C Connector, and associated pump stations. This feature

was included to achieve a balance between flood control, restoration of marsh habitat in ENP, and meeting the RPA criteria in the FWS B.O.

Under the current plan, normal operation of these reservoirs will be targeted to achieve marsh restoration and will have normal maximum depths of 2.0 feet. However, if the Corps determines that a flood emergency exists similar to an event like the ‘No Name storm’, the depth of water would be increased to a maximum of 4 feet. The S-332B pump station will pump to capacity (575 cfs) if limiting conditions within the sparrow habitat are not exceeded. Once the S-332B North Seepage Reservoir and S-332B/S-332C Connector were completed, there would be no overflow into the Park.

The Corps considered “marsh operation criteria” to include operation at the 2-foot default reservoir depth, as well as the flexibility to vary from this depth as testing and new parameters are developed by the interagency team. The development and evaluation of new information is intended to assist the Corps and interagency team in determining the marsh operation component of the next operating plan, the Combined Structural and Operation Plan (CSOP).

Initial criteria proposed for CSOP raises the maximum depth of the reservoirs to 2.5 feet. Under normal operations in the tentatively selected CSOP plan, the S-332B and S-332C pump stations that discharge into the buffer will pump from the L-31N Canal based on the gradient and water levels between the marsh in the ENP and the detention areas. The target gradient is based on measured water levels ¼ mile and 4 miles from the detention basin. The gradient or change in water level proposed in CSOP should be less than 0.4 feet per mile. Pumping into the detention area may be continued until this gradient is exceeded, at which point pumping would be reduced to a level that would maintain the target gradient or until stages exceed 2.5 feet in the detention basin. The CSOP plan includes a provision to continue pumping in order to maintain flood protection in the developed areas east of the canals and reduce discharges through C-111 into Barnes Sound.

The Corps is currently operating the C-111 reservoirs at the 2-foot default depth. Monitoring equipment is currently being installed at the wells constructed for this purpose. Conditions will be observed under various hydrologic conditions under the 2-foot operating parameters. Monitoring will continue as the operating criteria are adjusted and evaluated for system response as we move toward the proposed CSOP operational criteria with a maximum depth of 2.5 feet while targeting the 0.4-foot per mile gradient between the detention areas and the adjacent marsh. The Corps will monitor the effects of marsh operations on water levels in the ENP in coordination with the other agencies. The testing will use adaptive management and flexible water management operations to evaluate various pumping rates and water levels.

Current Status of Marsh Operations

As previously stated, the Corps is currently operating at the 2-foot default depth. Not all of the features of the C-111 reservoirs have been constructed, due to real estate issues. The northern and southern sections of the S-332B/S-332C Connector have been built, but the middle section has only recently been acquired by the sponsor. The SFWMD is required to certify adequate real estate interests for construction of the federal project, but they were

unable to certify lands for certain portions of the project until Congressional action in 2005 allowed for the transfer of lands from the ENP to SFWMD.

Monitoring well installation was delayed due to difficulties in acquiring special use permits for installation. Although the wells were finally installed in February-March 2004, the subsequent hurricane seasons of 2004 and 2005 prevented the SFWMD from installing the monitoring equipment. The SFWMD will not be ready to install the equipment and initiate monitoring until June 2007. The Corps is working with the USGS to install the monitoring equipment which will allow monitoring to begin by July 2006, and testing should begin in August 2006. The testing will be coordinated with the build out of the detention basins (to be completed in 2008). The results of the testing will determine the marsh operations criteria under the remainder of IOP and determine if any changes would be appropriate for CSOP.

It is recognized that new technical information may be developed as this plan is implemented and that observed results may differ from predicted results. Considering this, it may be necessary to adjust operations to address the new information or observed results to achieve better performance for environmental restoration and protection, to ensure the health, safety, and well being of the general public.

2.3 Selection of Recommended Alternative

The currently recommended alternative (Alternative 7R) was selected during the collaborative conflict resolution process by the Corps, SFWMD, USFWS, and ENP based on its ability to satisfy the project purpose to the greatest degree while providing flexibility in reducing other potential impacts to the human environment. As the NEPA process proceeds, the Corps welcomes comments from all interested parties prior to finalizing the selection process.

2.4 Comparison of Alternatives

The alternatives are compared in Section 4.0, "Environmental Consequences" of this document.

Table 2.1 Description of 95 Base Simulation

	95Base Modified 2 (Test 7 Phase I)
Regulation Schedule	C&SF regulation schedules prior to ISOP.
S-343 A/B and S-344	Per the above WCA 3A regulation schedule.
S-12 A/B/C/D	Operated according to current regulation schedule, which includes rainfall plan target. Split 10/20/30/40 percent west to east.
S-333: G-3273 < 6.8'	S-333 open to deliver 55% of Shark Slough target flows as per rainfall plan target (rainfall formula + WCA 3A regulatory discharge).
S-333: G-3273 > 6.8'	S-333 closed
L-29 constraint	8.0 ft
S-355A&B	Regulatory releases are constrained by L-29 and G-3273 triggers. <div style="text-align: center;"> Dry Wet Open 8.50 8.50 Close 6.50 6.50 </div>
S-337	Water supply only
S-151	Per the above WCA 3A regulation schedule.
S-334	Closed
S-332B	Non-existent
S-332B Seepage Reservoir	Non-existent
S-332D	Non-existent
S-332	Operated according to Taylor Slough Rainfall plan with 465 cfs capacity, subject to 165 cfs limitations from Mar 1 to Jul 15.
S-175	<div style="text-align: center;"> Dry Wet Open 4.7 4.7 Close 4.3 4.3 </div>
S-194	<div style="text-align: center;"> Dry Wet Open 5.3 5.3 Close 4.8 4.8 </div>
S-196	<div style="text-align: center;"> Dry Wet Open 5.3 5.3 Close 4.8 4.8 </div>
S-176	<div style="text-align: center;"> Dry Wet Open 5.00 5.00 Close 4.75 4.75 </div>
S-18C	<div style="text-align: center;"> Dry Wet Open 2.6 2.6 Close 2.3 2.3 </div>

Notes:

1. South Florida Water Management Model (SFWMM) version 3.8 was used in continuous simulation mode (31 year simulation using 1965 to 1995 climatic data set) to simulate 95Base Modified 2.
2. No changes to operational criteria of 95Base Modified 2 (includes Test7 Phase I criteria) for structures not listed in the table above.

Table 2. 2 Description of Reasonable and Prudent Alternatives

	RPA 00	RPA 01	RPA 02
Regulation Schedule	Deviation schedule for WCA 3A as specified by USACE including raising Zone D to Zone C from Nov 1 to Feb 11. No deviation in WCA 2A regulation schedule.	Deviation schedule for WCA 3A as specified by USACE including raising Zone D to Zone C from Nov 1 to Feb 11. No deviation in WCA 2A regulation schedule.	Deviation schedule for WCA 3A as specified by USACE including raising Zone D to Zone C from Nov 1 to Feb 11. No deviation in WCA 2A regulation schedule.
S-343 A/B and S-344	Closed Nov 1 to July 15 independent of WCA 3A levels.	Closed Nov 1 to July 15 independent of WCA 3A levels.	Closed Nov 1 to July 15 independent of WCA 3A levels.
S-12 A/B/C/D	S-12A closed Nov 1 to Jul 15; S-12B closed Jan 1 to Jul 15; S-12 C closed Feb 1 to Jul 15; S-12D operated normally according to WCA 3A schedule. For the remainder of the year, S-12A, B, and C followed the same schedule.	S-12A closed Nov 1 to Jul 15; S-12B closed Jan 1 to Jul 15; S-12 C closed Feb 1 to Jul 15; S-12D operated normally according to WCA 3A schedule. For the remainder of the year, S-12A, B, and C followed the same schedule.	S-12A closed Nov 1 to Jul 15; S-12B closed Jan 1 to Jul 15; S-12 C closed Feb 1 to Jul 15; S-12D operated normally according to WCA 3A schedule. For the remainder of the year, S-12A, B, and C followed the same schedule.
S-333: G-3273 < 6.8'	55% of the rainfall plan target to NESRS, plus as much of the remaining 45% that the S-12s can't discharge to be passed through S-334; and subject to capacity constraints, which are 1350 cfs at S-333, L-29 maximum stage limit, and canal stage limits downstream of S-334.	55% of the rainfall plan target to NESRS, plus as much of the remaining 45% that the S-12s can't discharge to be passed through S-334; and subject to capacity constraints, which are 1350 cfs at S-333, L-29 maximum stage limit, and canal stage limits downstream of S-334.	55% of the rainfall plan target to NESRS, plus as much of the remaining 45% that the S-12s can't discharge to be passed through S-334; and subject to capacity constraints, which are 1350 cfs at S-333, L-29 maximum stage limit, and canal stage limits downstream of S-334.
S-333: G-3273 > 6.8'	Pass 30% of regulatory discharge through S-333 subject to S-333 design capacity (1350 cfs)	Pass 45% of regulatory discharge through S-333 subject to S-333 design capacity (1350 cfs)	Pass 60% of regulatory discharge through S-333 subject to S-333 design capacity (1350 cfs)
L-29 constraint	9.0 ft	9.0 ft	9.0 ft
S-355A&B	Regulatory releases are constrained by L-29 and G-3273 triggers. Dry Wet Open 8.50 8.50 Close 6.50 6.50	Regulatory releases are constrained by L-29 and G-3273 triggers. Dry Wet Open 8.50 8.50 Close 6.50 6.50	Regulatory releases are constrained by L-29 and G-3273 triggers. Dry Wet Open 8.50 8.50 Close 6.50 6.50
S-337	Water supply only	Water supply only	Water supply only
S-151	Per the above WCA 3A regulation schedule.	Per the above WCA 3A regulation schedule.	Per the above WCA 3A regulation schedule.
S-334	Water supply only	Water supply only	Water supply only
S-332D	Pumped up to 500 cfs design capacity from Aug 1 to Jan 31 and to 165 cfs from Feb 1 to Jul 31. Dry Wet On 5.00 5.00 Off 4.80 4.80	Pumped up to 500 cfs design capacity from Aug 1 to Jan 31 and to 165 cfs from Feb 1 to Jul 31. Dry Wet On 5.00 5.00 Off 4.80 4.80	Pumped up to 500 cfs design capacity from Aug 1 to Jan 31 and to 165 cfs from Feb 1 to Jul 31. Dry Wet On 5.00 5.00 Off 4.80 4.80
S-332	Closed	Closed	Closed

	RPA 00			RPA 01			RPA 02		
S-175	Closed			Closed			Closed		
S-194		Dry	Wet		Dry	Wet		Dry	Wet
	Open	5.3	5.3	Open	5.3	5.3	Open	5.3	5.3
	Close	4.8	4.8	Close	4.8	4.8	Close	4.8	4.8
S-196		Dry	Wet		Dry	Wet		Dry	Wet
	Open	5.5	5.5	Open	5.5	5.5	Open	5.5	5.5
	Close	4.8	4.8	Close	4.8	4.8	Close	4.8	4.8
S-176		Dry	Wet		Dry	Wet		Dry	Wet
	Open	5.2	5.2	Open	5.2	5.2	Open	5.2	5.2
	Close	5.0	5.0	Close	5.0	5.0	Close	5.0	5.0
S-18C		Dry	Wet		Dry	Wet		Dry	Wet
	Open	2.6	2.6	Open	2.6	2.6	Open	2.6	2.6
	Close	2.3	2.3	Close	2.3	2.3	Close	2.3	2.3

Table 2.3 Description of ISOP 2000

	ISOP-9d (ISOP 2000)
Regulation Schedule	Deviation schedules for WCA 2A (S-11 A,B,C structures closed) and WCA 3A as specified by USACE.
S-343 A/B and S-344	Closed Jan 1 to July 15 independent of WCA 3A levels.
S-12 A/B/C/D	S-12A closed Dec 1 to Jul 15; S-12B closed Jan 1 to Jul 15; S-12 C,D closed Feb 1 to Jul 15; Follow WCA 3A regulation schedule as in 95 Base for remainder of year
S-333: G-3273 < 6.8'	Maximum possible discharge subject to S-333 design capacity (1350 cfs) and limited to sum of NESRS rainfall plan targets plus outflow through S-334.
S-333: G-3273 > 6.8'	Maximum possible discharge subject to S-333 design capacity (1350 cfs) and limited to outflow through S-334
L-29 constraint	9.0 ft
S-355A&B	Not modeled
S-337	Regulatory releases as per WCA 3A deviation schedule
S-151	Per the above WCA 3A regulation schedule.
S-334	Passes S-333 regulatory release to SDCS
S-332B	Pumped up to 325 cfs. <div style="margin-left: 100px;"> Dry Wet On 4.70 4.70 Off 4.20 4.20 </div>
S-332B Seepage Reservoir	Not modeled
S-332D	Pumped up to 500 cfs from Jul 16 to Nov 31; 325 cfs from Dec 1 to Jan 31; and 165 cfs from Feb 1 to July 15. <div style="margin-left: 100px;"> Dry Wet On 5.00 4.50 Off 4.80 4.00 </div>
S-332	Closed
S-175	Closed
S-194	Operated to maximize flood control discharges to coast <div style="margin-left: 100px;"> Dry Wet Open 4.70 4.70 Close 4.20 4.20 </div>
S-196	Operated to maximize flood control discharges to coast. <div style="margin-left: 100px;"> Dry Wet Open 4.70 4.70 Close 4.20 4.20 </div>
S-176	 <div style="margin-left: 100px;"> Dry Wet Open 4.70 4.70 Close 4.50 4.50 </div>
S-18C	 <div style="margin-left: 100px;"> Dry Wet Open 2.25 2.25 Close 2.00 2.00 </div>

Table 2. 4 Description of Alternative 1 - ISOP 2001

	ISOP-9dR (ISOP 2001)
Regulation Schedule	Deviation schedule for WCA 3A as specified by USACE including raising Zone D to Zone C from Nov 1 to Feb 11. No deviation in WCA 2A regulation schedule.
S-343 A/B and S-344	Closed Nov 1 to July 15 independent of WCA 3A levels.
S-12 A/B/C/D	S-12A closed Nov 1 to Jul 15; S-12B closed Jan 1 to Jul 15; S-12 C closed Feb 1 to Jul 15; S-12D was operated normally according to WCA 3A schedule. For the remainder of the year, S-12A, B, and C followed the same regulation schedule.
S-333: G-3273 < 6.8'	55% of the rainfall plan target to NESRS, plus as much of the remaining 45% that the S-12s can't discharge to be passed through S-334; and subject to capacity constraints, which are 1350 cfs at S-333, L-29 maximum stage limit, and canal stage limits downstream of S-334.
S-333: G-3273 > 6.8'	No discharge to NESRS; release 55% of the rainfall plan target, plus as much of the remaining 45% that the S-12s can't discharge through S-333 and S-334, subject to capacity constraints.
L-29 constraint	9.0 ft
S-355A&B	Not modeled
S-337	Regulatory releases as per WCA 3A deviation schedule.
S-151	Per the above WCA 3A regulation schedule.
S-334	Same as in 95Base except that it also may pass all or part of S-333 releases to the SDCS, depending on stage at G-3273.
S-332B	Pumped up to 325 cfs from Jun through Jan; and 125 cfs from Feb through May. <div><div>DryWet</div><div>On4.704.70</div><div>Off4.204.20</div></div>
S-332B Seepage Reservoir	160 acres with emergency overflow
S-332D	Pumped up to 500 cfs from Jul 16 to Nov 31; 325 cfs from Dec 1 to Jan 31; and 165 cfs from Feb 1 to July 15. <div><div>DryWet</div><div>On5.004.50</div><div>Off4.804.00</div></div>
S-332	Closed
S-175	Closed
S-194	Operated to maximize flood control discharges to coast <div><div>DryWet</div><div>Open4.704.70</div><div>Close4.204.20</div></div>
S-196	Operated to maximize flood control discharges to coast. <div><div>DryWet</div><div>Open4.704.70</div><div>Close4.204.20</div></div>
S-176	<div><div>DryWet</div><div>Open4.704.70</div><div>Close4.504.50</div></div>
S-18C	<div><div>DryWet</div><div>Open2.252.25</div><div>Close2.002.00</div></div>

Table 2.5 Description of Alternative 2.

	Alternative 2	
Treatment	Phase 1	Phase 2
	IOP 2b	IOP 2
Regulation Schedule	Deviation schedules for WCA 2A (S-11 A,B,C structures closed) and 3A as specified by USACE.	Deviation schedules for WCA 2A (S-11 A,B,C structures closed) and 3A as specified by USACE.
S-343 A/B S-344	Closed Jan 1 to July 15 independent of WCA 3A levels.	Closed Jan 1 to July 15 independent of WCA 3A levels.
S-12 A/B/C/D	S-12A closed Dec 1 - Jul 15; S-12B closed Jan 1 - Jul 15; S-12 C,D closed Feb 1 - Jul 15; Follow WCA 3A regulation schedule as in 95 Base for remainder of year	S-12A closed Dec 1 to Jul 15; S-12B closed Jan 1 to Jul 15; S-12 C,D close Feb 1 to Jul 15; Follow WCA 3A regulation schedule as in 95 Base for remainder of year
S-333: G-3273 < 6.8'	55% of the rainfall plan target to NESRS, plus as much of the remaining 45% that the S-12s can't discharge to be passed through S-334; and subject to capacity constraints, which are 1350 cfs at S-333, L-29 maximum stage limit, and canal stage limits downstream of S-334.	S-333 open to deliver 55% of Shark Slough target flows as per rainfall plan target (rainfall formula + WCA 3A regulatory discharge).
S-333: G-3273 > 6.8'	No discharge to NESRS; release 55% of the rainfall plan target, plus as much of the remaining 45% that the S-12s can't discharge through S-333 and S-334, subject to capacity constraints.	Maximum possible discharge subject to S-333 design capacity (1350 cfs) with G3273 trigger removed.
L-29 constraint	9.0 ft	9.0 ft
S-337	Regulatory releases as per WCA 3A deviation schedule	Regulatory releases as per WCA 3A deviation schedule
S-151	Regulatory releases as per WCA 3A deviation schedule	Regulatory releases as per WCA 3A deviation schedule
S-334	Passes S-333 regulatory release to SDCS	Closed
S-332B	Pumped up to 375 cfs On at 4.7, Off at 4.2	Pumped up to 325 cfs; On at 4.5, Off at 4.0
S-332B Seepage Reservoir	160 acres with emergency overflow.	160 acres with emergency overflow.
S-332D	Pumped up to 500 cfs design capacity from Aug 1 to Nov 30; 325 cfs from Dec 1 to Dec 31; 165 cfs from Jan 1 to Jul 31. Dry-On at 5.0, Off at 4.8; Wet-On at 4.5, Off at 4.0.	Pumped up to 500 cfs design capacity from Aug 1 to Nov 30; 325 cfs from Dec 1 to Jan 31; 165 cfs from Feb 1 to Jul 31. Dry-On at 5.0, Off at 4.8; Wet-On at 4.5, Off at 4.0.
S-332	Closed	Closed
S-175	Closed	Closed
S-194 S-196	Operated to maximize flood control discharges to coast; Dry- Open at 4.7, Close at 4.2; Wet- Open at 4.7, Close at 4.2.	Operated to maximize flood control discharges to coast; Dry- Open at 4.7, Close at 4.2; Wet- Open at 4.7, Close at 4.2.
S-176	Dry-Open at 4.7, Close at 4.5; Wet-Open at 4.7, Close at 4.5.	Dry-Open at 5.0, Close at 4.75; Wet-Open at 5.0, Close at 4.75.
S-18C	Dry-Open at 2.25, Close at 2.0; Wet-Open at 2.25, Close at 2.0.	Dry-Open at 2.25, Close at 2.0; Wet-Open at 2.25, Close at 2.0.

Table 2. 6 Description of Alternative 3.

Treatment	Alternative 3	
	Phase 1	Phase 2
	IOP 2a	IOP 2
Regulation Schedule	Deviation schedules for WCA 2A (S-11 A,B,C structures closed) and 3A as specified by USACE.	Deviation schedules for WCA 2A (S-11 A,B,C structures closed) and 3A as specified by USACE.
S-343 A/B S-344	Closed Jan 1 to July 15 independent of WCA 3A levels.	Closed Jan 1 to July 15 independent of WCA 3A levels..
S-12 A/B/C/D	S-12A closed Dec 1 to Jul 15; S-12B closed Jan 1 to Jul 15; S-12 C,D close Feb 1 to Jul 15; Follow WCA 3A regulation schedule as in 95 Base for remainder of year	S-12A closed Dec 1 - Jul 15; S-12B closed Jan 1 - Jul 15; S-12 C,D closed Feb 1 - Jul 15; Follow WCA 3A regulation schedule as in 95 Base for remainder of year
S-333: G-3273 < 6.8'	S-333 open to deliver 55% of Shark Slough target flows as per rainfall plan target (rainfall formula + WCA 3A regulatory discharge).	S-333 open to deliver 55% of Shark Slough target flows as per rainfall plan target (rainfall formula + WCA 3A regulatory discharge).
S-333: G-3273 > 6.8'	S-333 closed	Maximum possible discharge subject to S-333 design capacity (1350 cfs) with G3273 trigger removed.
L-29 constraint	9.0 ft	9.0 ft
S-337	Regulatory releases as per WCA 3A deviation schedule	Regulatory releases as per WCA 3A deviation schedule
S-151	Regulatory releases as per WCA 3A deviation schedule	Regulatory releases as per WCA 3A deviation schedule
S-334	Closed	Closed
S-332B	Pumped up to 325 cfs; On at 4.5, Off at 4.0.	Pumped up to 325 cfs; On at 4.5, Off at 4.0.
S-332B Seepage Reservoir	160 acres with emergency overflow.	160 acres with emergency overflow.
S-332D	Pumped up to 500 cfs design capacity from Aug 1 to Nov 30; 325 cfs from Dec 1 to Jan 31; 165 cfs from Feb 1 to Jul 31. Dry-On at 5.0, Off at 4.8; Wet-On at 4.5, Off at 4.0.	Pumped up to 500 cfs design capacity from Aug 1 to Nov 30; 325 cfs from Dec 1 to Jan 31; 165 cfs from Feb 1 to Jul 31. Dry-On at 5.0, Off at 4.8; Wet-On at 4.5, Off at 4.0.
S-332	Closed	Closed
S-175	Closed	Closed
S-194 S-196	Operated to maximize flood control discharges to coast; Dry- Open at 4.7, Close at 4.2; Wet-Open at 4.7, Close at 4.2.	Operated to maximize flood control discharges to coast; Dry- Open at 4.7, Close at 4.2; Wet-Open at 4.7, Close at 4.2.
S-176	Dry-Open at 5.0, Close at 4.75; Wet-Open at 5.0, Close at 4.75.	Dry-Open at 5.0, Close at 4.75; Wet-Open at 5.0, Close at 4.75.
S-18C	Dry-Open at 2.25, Close at 2.0; Wet-Open at 2.25, Close at 2.20.	Dry-Open at 2.25, Close at 2.0; Wet-Open at 2.25, Close at 2.20.

Table 2.7 Description of Alternative 4.

Treatment	Alternative 4	
	Phase 1	Phase 2
	IOP 3a	IOP 3
Regulation Schedule	Deviation schedules for WCA 1, 2A and 3A as specified by USACE.	Deviation schedules for WCA 1, 2A and 3A as specified by USACE.
S-343 A/B S-344	Closed Nov 1 to July 15 independent of WCA 3A levels.	Closed Nov 1 to July 15 independent of WCA 3A levels..
S-12 A/B/C/D	S-12A, B, C and D closed Nov 1 to Jul 15; Follow WCA 3A regulation schedule as in 95 Base for remainder of year	S-12A, B, C and D closed Nov 1 to Jul 15; Follow WCA 3A regulation schedule as in 95 Base for remainder of year
S-333: G-3273 < 6.8'	S-333 open to deliver 55% of Shark Slough target flows as per rainfall plan target (rainfall formula + WCA 3A regulatory discharge).	S-333 open to deliver 55% of Shark Slough target flows as per rainfall plan target (rainfall formula + WCA 3A regulatory discharge).
S-333: G-3273 > 6.8'	S-333 closed	Maximum possible discharge subject to S-333 design capacity (1350 cfs) with G3273 trigger removed.
L-29 constraint	9.0 ft	9.0 ft
S-337	Regulatory releases as per WCA 3A deviation schedule	Regulatory releases as per WCA 3A deviation schedule
S-151	Regulatory releases as per WCA 3A deviation schedule	Regulatory releases as per WCA 3A deviation schedule
S-334	Closed	Closed
S-332B	Pumped up to 325 cfs; Dry-On at 4.5, Off at 4.0; Wet-On at 4.5, Off at 4.0.	Pumped up to 325 cfs; Dry-On at 4.5, Off at 4.0; Wet-On at 4.5, Off at 4.0.
S-332B Seepage Reservoir	160 acres with emergency overflow.	160 acres with emergency overflow.
S-332D	Pumped up to 500 cfs design capacity from Aug 1 to Nov 30; 325 cfs from Dec 1 to Jan 31; 165 cfs from Feb 1 to Jul 31. Dry-On at 5.0, Off at 4.8; Wet-On at 4.5, Off at 4.0.	Pumped up to 500 cfs design capacity from Aug 1 to Nov 30; 325 cfs from Dec 1 to Jan 31; 165 cfs from Feb 1 to Jul 31. Dry-On at 5.0, Off at 4.8; Wet-On at 4.5, Off at 4.0.
S-332	Closed	Closed
S-175	Closed	Closed
S-194 S-196	Operated to maximize flood control discharges to coast; Dry-Open at 4.7, Close at 4.2; Wet-Open at 4.7, Close at 4.2.	Operated to maximize flood control discharges to coast; Dry-Open at 4.7, Close at 4.2; Wet-Open at 4.7, Close at 4.2.
S-176	Dry-Open at 5.0, Close at 4.75; Wet-Open at 5.0, Close at 4.75.	Dry-Open at 5.0, Close at 4.75; Wet-Open at 5.0, Close at 4.75.
S-18C	Dry-Open at 2.25, Close at 2.0; Wet-Open at 2.25, Close at 2.0.	Dry-Open at 2.25, Close at 2.0; Wet-Open at 2.25, Close at 2.0.

Table 2. 8 Description of Alternative 5.

Treatment	Alternative 5	
	Phase 1	Phase 2
	IOP 4a (ISOP 9dR1)	IOP 4 (ISOP 9dR2)
Regulation Schedule	No deviation schedules for WCA 2A. Deviation schedule for WCA 3A as specified by USACE including raising Zone D to Zone C from Nov 1 to Feb. 11.	No deviation schedules for WCA 2A. Deviation schedule for WCA 3A as specified by USACE including raising Zone D to Zone C from Nov 1 to Feb. 11.
S-343 A/B S-344	Closed Nov 1 to July 15 independent of WCA 3A levels..	Closed Nov 1 to July 15 independent of WCA 3A levels..
S-12 A/B/C/D	S-12A closed Nov 1 to Jul 15; S-12B closed Jan 1 to Jul 15; S-12 C,D close Feb 1 to Jul 15; Follow WCA 3A regulation schedule as in 95 Base for remainder of year	S-12A closed Nov 1 to Jul 15; S-12B closed Jan 1 to Jul 15; S-12 C,D close Feb 1 to Jul 15; Follow WCA 3A regulation schedule as in 95 Base for remainder of year
S-333: G-3273 < 6.8'	55% of the rainfall plan target to NESRS, plus as much of the remaining 45% that the S-12s can't discharge to be passed through S-334; and subject to capacity constraints, which are 1350 cfs at S-333, L-29 maximum stage limit, and canal stage limits downstream of S-334.	55% of the rainfall plan target to NESRS, plus as much of the remaining 45% that the S-12s can't discharge to be passed through S-334; and subject to capacity constraints, which are 1350 cfs at S-333, L-29 maximum stage limit, and canal stage limits downstream of S-334.
S-333: G-3273 > 6.8'	No discharge to NESRS; release 55% of the rainfall plan target, plus as much of the remaining 45% that the S-12s can't discharge through S-333 and S-334, subject to capacity constraints.	Maximum possible discharge subject to S-333 design capacity (1350 cfs) with G3273 trigger removed.
L-29 constraint	9.0 ft	9.0 ft
S-337	Regulatory releases as per WCA 3A deviation schedule	Regulatory releases as per WCA 3A deviation schedule
S-151	Regulatory releases as per WCA 3A deviation schedule	Regulatory releases as per WCA 3A deviation schedule
S-334	Same as 95Base except that it also may pass all or part of S-333 releases to the SDCS, depending on stage at G-3273.	Closed
S-332B	Pumped up to 500 cfs from Aug-Jan; 325 cfs in Feb, Jun, and July; and 125 cfs Mar-May; Dry-On at 5.0, Off at 4.3; Wet-On at 4.7, Off at 4.0.	Pumped up to 500 cfs from Aug-Jan; 325 cfs in Feb, Jun, and July; and 125 cfs Mar-May; Dry-On at 5.0, Off at 4.3; Wet-On at 4.7, Off at 4.0.
S-332B Seepage Reservoir	160 acres with emergency overflow.	160 acres with emergency overflow.
S-332D	Pumped up to 500 cfs design capacity from July 16 to Nov 30; 325 cfs Dec 1 to Jan 31; 165 cfs from Feb 1 to Jul 15. Dry-On at 5.0, Off at 4.8; Wet-On at 4.7, Off at 4.2.	Pumped up to 500 cfs design capacity from July 16 to Nov 30; 325 cfs Dec 1 to Jan 31; 165 cfs from Feb 1 to Jul 15. Dry-On at 5.0, Off at 4.8; Wet-On at 4.7, Off at 4.2.
S-332	Closed	Closed
S-175	Closed	Closed
S-194 S-196	Operated to maximize flood control discharges to coast; Dry-Open at 4.7, Close at 4.2; Wet-Open at 4.7, Close at 4.2.	Operated to maximize flood control discharges to coast; Dry-Open at 4.7, Close at 4.2; Wet-Open at 4.7, Close at 4.2.
S-176	Dry-Open at 4.85, Close at 4.65; Wet-Open at 4.8, Close at 4.7.	Dry-Open at 4.85, Close at 4.65; Wet-Open at 4.8, Close at 4.7.
S-18C	Dry-Open at 2.25, Close at 2.0; Wet-Open at 2.25, Close at 2.0.	Dry-Open at 2.25, Close at 2.0; Wet-Open at 2.25, Close at 2.0.

Table 2.9 Description of Alternative 6.

	Alternative 6									
Regulation Schedule	Deviation schedule for WCA 3A as specified by USACE including raising Zone D to Zone C from Nov 1 to Feb 11. No deviation in WCA 2A regulation schedule.									
S-343 A/B and S-344	Closed Nov 1 to July 15 independent of WCA 3A levels.									
S-12 A/B/C/D	S-12A closed Nov 1 to Jul 15; S-12B closed Jan 1 to Jul 15; S-12C closed Feb 1 to Jul 15; S-12D operated according to WCA 3A regulation schedule. Follow WCA 3A regulation schedule after Jul 15.									
S-333: G-3273 < 6.8'	55% of the rainfall plan target to NESRS, plus as much of the remaining 45% that the S-12s can't discharge to be passed through S-334; and subject to capacity constraints, which are 1350 cfs at S-333, L-29 maximum stage limit, and canal stage limits downstream of S-334.									
S-333: G-3273 > 6.8'	No discharge to NESRS; release 55% of the rainfall plan target, plus as much of the remaining 45% that the S-12s can't discharge through S-333 and S-334, subject to capacity constraints.									
L-29 constraint	9.0 ft									
S-355A&B	<table><tr><td></td><td>Dry</td><td>Wet</td></tr><tr><td>Open</td><td>8.50</td><td>8.50</td></tr><tr><td>Close</td><td>6.50</td><td>6.50</td></tr></table>		Dry	Wet	Open	8.50	8.50	Close	6.50	6.50
	Dry	Wet								
Open	8.50	8.50								
Close	6.50	6.50								
S-337	Regulatory releases as per WCA 3A deviation schedule.									
S-151	Regulatory releases as per WCA 3A deviation schedule.									
S-334	Same as in 95Base except that it also may pass all or part of S-333 releases to the SDCS, depending on stage at G-3273.									
S-332B	Pumped up to 250 cfs from Jun through Feb ; and 125 cfs from Mar through May. <table><tr><td></td><td>Dry</td><td>Wet</td></tr><tr><td>On</td><td>5.00</td><td>4.70</td></tr><tr><td>Off</td><td>4.30</td><td>4.00</td></tr></table>		Dry	Wet	On	5.00	4.70	Off	4.30	4.00
	Dry	Wet								
On	5.00	4.70								
Off	4.30	4.00								
S-332B Seepage Reservoir	400 acres with minimum overflow (if any)									
S-332D	Pumped up to 500 cfs from Jul 16 to Nov 31; 325 cfs from Dec 1 to Jan 31; and 165 cfs from Feb 1 to Jul 15. <table><tr><td></td><td>Dry</td><td>Wet</td></tr><tr><td>On</td><td>5.00</td><td>4.70</td></tr><tr><td>Off</td><td>4.80</td><td>4.20</td></tr></table>		Dry	Wet	On	5.00	4.70	Off	4.80	4.20
	Dry	Wet								
On	5.00	4.70								
Off	4.80	4.20								
S-332	Closed									
S-175	Closed									
S-194	Operated to maximize flood control discharges to coast <table><tr><td></td><td>Dry</td><td>Wet</td></tr><tr><td>Open</td><td>4.70</td><td>4.70</td></tr><tr><td>Close</td><td>4.20</td><td>4.20</td></tr></table>		Dry	Wet	Open	4.70	4.70	Close	4.20	4.20
	Dry	Wet								
Open	4.70	4.70								
Close	4.20	4.20								
S-196	Operated to maximize flood control discharges to coast. <table><tr><td></td><td>Dry</td><td>Wet</td></tr><tr><td>Open</td><td>4.70</td><td>4.70</td></tr><tr><td>Close</td><td>4.20</td><td>4.20</td></tr></table>		Dry	Wet	Open	4.70	4.70	Close	4.20	4.20
	Dry	Wet								
Open	4.70	4.70								
Close	4.20	4.20								
S-176	<table><tr><td></td><td>Dry</td><td>Wet</td></tr><tr><td>Open</td><td>4.85</td><td>4.80</td></tr><tr><td>Close</td><td>4.65</td><td>4.70</td></tr></table>		Dry	Wet	Open	4.85	4.80	Close	4.65	4.70
	Dry	Wet								
Open	4.85	4.80								
Close	4.65	4.70								
S-18C	<table><tr><td></td><td>Dry</td><td>Wet</td></tr><tr><td>Open</td><td>2.25</td><td>2.25</td></tr><tr><td>Close</td><td>2.00</td><td>2.00</td></tr></table>		Dry	Wet	Open	2.25	2.25	Close	2.00	2.00
	Dry	Wet								
Open	2.25	2.25								
Close	2.00	2.00								

Table 2. 10 Description of Alternative 7.

	Alternative 7a	Alternative 7b
	No WCA 3A Regulatory Releases to SDCS or Shark Slough	WCA 3A Regulatory Releases to SDCS
Regulation Schedule	Deviation schedule for WCA 3A as specified by USACE including raising Zone D to Zone C from Nov 1 to Feb 11. No deviation in WCA 2A regulation schedule.	Deviation schedule for WCA 3A as specified by USACE including raising Zone D to Zone C from Nov 1 to Feb 11. No deviation in WCA 2A regulation schedule.
S-343 A/B and S-344	Closed Nov 1 to July 15 independent of WCA 3A levels.	Closed Nov 1 to July 15 independent of WCA 3A levels.
S-12 A/B/C/D	S-12A closed Nov 1 to Jul 15; S-12B closed Jan 1 to Jul 15; S-12C closed Feb 1 to Jul 15; S-12D no closure dates. Follow WCA 3A regulation schedule after Jul 15. Note: If closure requires regulatory releases to SDCS then switch to operations for regulatory releases to SDCS.	S-12A closed Nov 1 to Jul 15; S-12B closed Jan 1 to Jul 15; S-12C closed Feb 1 to Jul 15; S-12D no closure dates. Follow WCA 3A regulation schedule after Jul 15.
S-333: G-3273 < 6.8' NGVD Degrade the lower four miles of the L-67 extension	55% of the rainfall plan target to NESRS and 45% through the S-12 structures	55% of the rainfall plan target to NESRS, plus as much of the remaining 45% that the S-12s can't discharge to be passed through S-334; and subject to capacity constraints, which are 1350 cfs at S-333, L-29 maximum stage limit, and canal stage limits downstream of S-334.
S-333: G-3273 > 6.8' NGVD	Closed	Match S-333 with S-334 flows
L-29 constraint	9.0 ft	9.0 ft
S-355A&B	Follow the same constraints as S-333. Open whenever gradient allows southerly flow.	Follow the same constraints as S-333. Open whenever gradient allows southerly flow.
S-337	Water Supply	Regulatory releases as per WCA 3A deviation schedule.
S-151	Water Supply	Regulatory releases as per WCA 3A deviation schedule.
S-335	Water Supply Allow releases through S-335 if there is downstream capacity consistent with pre-ISOP operations. "Downstream capacity" would not include capacity created by pumping at S-332B or S-332D and not trigger opening S-18C at 2.6. Note: It is recognized that under	When making regulatory releases through S-151, match S-335 outflows with inflows from S-151 and S-337 Use S-333/334 before S-335

	Alternative 7a	Alternative 7b
	No WCA 3A Regulatory Releases to SDCS or Shark Slough	WCA 3A Regulatory Releases to SDCS
	these conditions operations of S-335 would be infrequent.	
S-334	Closed	Pass all or partial S-333 flows Depending on stage at G-3273
S-338	Open 5.8 Close 5.5	Open 5.8 Close 5.4
G-211	Open 6.0 Close 5.5	Open 5.7 Close 5.3
S-331	Angel's Criteria	Angel's Criteria
S-332B Note 1: There would be two 125-cfs pumps and one 75-cfs pump directed to the second detention basin. The remaining two 125-cfs pumps would be directed to the first detention basin. If possible, the 75-cfs pump would be designed so that it can be directed to either basin. Note 2: A new indicator would be established for Subpopulation F and a new gauge would be installed about ½ mile west of the weir on the western edge of the retention area. Pumping would cease after 180 days of above ground hydroperiod at the new gauge during a year that runs from July 15 th to July 14 th . After water levels recede below ground, pumping can be resumed at a rate that maintains water elevations below ground at the gauge until the beginning of the next year.	Pumped up to 250 cfs* from Jun through Feb; and 125 cfs from Mar through May. On 5.0 Off 4.7** *This pumping rate is based on the assumption that there would be no overflow into the Park. If there is overflow into the Park, the pumping rate would be adjusted. **If, after the first 30 days of operation, there is no observed drawdown at the pump, this stage level would be raised to 4.8	Pumped up to 250 cfs* from Jun through Feb; and 125 cfs from Mar through May. On 4.8 Off 4.5 *This pumping rate is based on the assumption that there would be no overflow into the Park. If there is overflow into the Park, the pumping rate would be adjusted to eliminate overflow.
S-332B Seepage Reservoir	400 acres with no overflow to the west	400 acres with no overflow to the west
S-332D	Pumped up to 500 cfs from Jul 16 (or the end of the breeding season, as confirmed by FWS) to Nov 31; 325 cfs from Dec 1 to Jan 31; and 165 cfs* from Feb 1 to Jul 15. Meet Taylor Slough Rainfall formula (No L-31W constraint)	Pumped up to 500 cfs from Jul 16 (or the end of the breeding season, as confirmed by FWS) to Nov 31; 325 cfs from Dec 1 to Jan 31; and 165 cfs* from Feb 1 to Jul 15. Meet Taylor Slough Rainfall formula (No L-31W constraint)

	Alternative 7a	Alternative 7b
	No WCA 3A Regulatory Releases to SDCS or Shark Slough	WCA 3A Regulatory Releases to SDCS
	On 4.85 Off 4.65 *New information would be sought to evaluate the feasibility of modifying the 165 cfs constraint	On 4.7 Off 4.5 *New information would be sought to evaluate the feasibility of modifying the 165 cfs constraint
S-332	Closed	Closed
S-175	Closed	Closed
S-194	Open 5.5 Close 4.8	Operated to maximize flood control discharges to coast Open 4.9 Close 4.5
S-196	Open 5.5 Close 4.8	Operated to maximize flood control discharges to coast Open 4.9 Close 4.5
S-176	Open 5.0 Close 4.75	Open 4.9 Close 4.7
S-177	Open 4.2 (see S-197 open) Close 3.6	Open 4.2 (see S-197 open) Close 3.6
S-18C	Open 2.6 Close 2.3	Open 2.25 Close 2.00
S-197	<p>If S-177 headwater is greater than 4.1 or S-18C headwater is greater than 2.8 open 3 culverts</p> <p>If S-177 headwater is greater than 4.2 for 24 hours or S-18C headwater is greater than 3.1 open 7 culverts</p> <p>If S-177 headwater is greater than 4.3 or S-18C headwater is greater than 3.3 open 13 culverts</p> <p>Close gates when all the following conditions are met:</p> <ol style="list-style-type: none"> 4. S-176 headwater is less than 5.2 and S-177 headwater is less than 4.2 5. Storm has moved away from the basin 6. After Conditions 1 and 2 are met, keep the number of S-197 culverts open necessary only to match residual flow through S-176. All culverts should be closed if S-177 headwater is less than 4.1 after all conditions are satisfied. 	<p>If S-177 headwater is greater than 4.1 or S-18C headwater is greater than 2.8 open 3 culverts</p> <p>If S-177 headwater is greater than 4.2 for 24 hours or S-18C headwater is greater than 3.1 open 7 culverts</p> <p>If S-177 headwater is greater than 4.3 or S-18C headwater is greater than 3.3 open 13 culverts</p> <p>Close gates when all the following conditions are met:</p> <ol style="list-style-type: none"> 4. S-176 headwater is less than 5.2 and S-177 headwater is less than 4.2 5. Storm has moved away from the basin 6. After Conditions 1 and 2 are met, keep the number of S-197 culverts open necessary only to match residual flow through S-176. All culverts should be closed if S-177 headwater is less than 4.1 after all conditions are satisfied.

Table 2. 11 Description of Alternative 7R.

	No WCA-3A Regulatory Releases to SDCS or Shark Slough	WCA-3A Regulatory Releases to SDCS
Regulation Schedule	Deviation schedule for WCA-3A (Figure 9), November 2000 WCA-3A interim regulation schedule) as specified by USACE including raising Zone D to Zone C from Nov 1 to Feb 11. No deviation in WCA-2A regulation schedule.	Deviation schedule for WCA-3A (Figure 9), November 2000 WCA-3A interim regulation schedule) as specified by USACE including raising Zone D to Zone C from Nov 1 to Feb 11. No deviation in WCA-2A regulation schedule.
S-343 A/B and S-344	Closed Nov 1 to July 15 independent of WCA-3A levels.	Closed Nov 1 to July 15 independent of WCA-3A levels.
S-12 A/B/C/D Sandbag culverts under Tram Road by 1 February if necessary.	S-12A closed Nov 1 to Jul 15; S-12B closed Jan 1 to Jul 15; S-12C closed Feb 1 to Jul 15; S-12D no closure dates. Follow WCA 3A regulation schedule after Jul 15. Note: If closure requires regulatory releases to SDCS then switch to operations for regulatory releases to SDCS.	S-12A closed Nov 1 to Jul 15; S-12B closed Jan 1 to Jul 15; S-12C closed Feb 1 to Jul 15; S-12D no closure dates. Follow WCA 3A regulation schedule after Jul 15.
S-333: G-3273 < 6.8' NGVD Degrade the lower four miles of the L-67 extension	55% of the rainfall plan target to NESRS and 45% through the S-12 structures When WCA-3A is in Zone E1 or above, maximum practicable through S-333 to NESRS per WCA-3A deviation schedule.	55% of the rainfall plan target to NESRS, plus as much of the remaining 45% that the S-12s can't discharge to be passed through S-334; and subject to capacity constraints, which are 1350 cfs at S-333, L-29 maximum stage limit, and canal stage limits downstream of S-334. When WCA-3A is in Zone E1 or above, maximum practicable through S-333 to NESRS per WCA-3A deviation schedule.
S-333: G-3273 > 6.8' NGVD	Closed	Match S-333 with S-334 flows
L-29 constraint	9.0 ft	9.0 ft
S-355A&B	Follow the same constraints as S-333. Open whenever gradient allows southerly flow.	Follow the same constraints as S-333. Open whenever gradient allows southerly flow.
S-337	Water Supply	Regulatory releases as per WCA-3A deviation schedule.
S-151	Water Supply	Regulatory releases as per WCA-3A deviation schedule.
S-335	Water Supply The intent is to limit the volume of water passed at S335 to pre-ISOP conditions and not use S332B, S332C, or S332D or other triggers	When making regulatory releases through S-151, limit S-335 outflows to not exceed inflows from the S-151/S-337 path Use S-333/S-334 before S-335/S-

	No WCA-3A Regulatory Releases to SDCS or Shark Slough	WCA-3A Regulatory Releases to SDCS
	to pass additional flows. Note: It is recognized that under these conditions operations of S-335 would be infrequent.	151/S-337
S-334	Water Supply	Pass all or partial S-333 flows Depending on stage at G-3273
S-338	Open 5.8 Close 5.5	Open 5.8 Close 5.4
G-211 Tailwater constraint 5.3	Open 6.0 Close 5.5	Open 5.7 Close 5.3
S-331	Angel's Criteria	Angel's Criteria
S-332B Note 1: There will be two 125-cfs pumps and one 75-cfs pump directed to the west seepage reservoir. The remaining two 125-cfs pumps will be directed to the north seepage reservoir. Note 2: A new indicator will be established for Subpopulation F. Operations will be modified as necessary to achieve desired habitat conditions consistent with the restoration purposes outlined in the C-111 GRR.	Pumped up to 575 cfs* On 5.0 Off 4.7** *Pump to capacity if limiting conditions within the Sparrow habitat are not exceeded. There will be no overflow into the Park when the project (i.e., the S-332B north seepage reservoir and the partial S-332B/S-332C connector) is complete and when it is practical to do the construction necessary to raise the western levee. There may be overflow during emergency events until the project is complete and the western levee is raised. **If, after the first 30 days of operation, there is no observed drawdown at the pump, this stage level will be raised to 4.8	Pumped up to 575 cfs* On 4.8 Off 4.5 *Pump to capacity if limiting conditions within the Sparrow habitat are not exceeded. There will be no overflow into the Park when the project (i.e., the S-332B north seepage reservoir and the partial S-332B/S-332C connector) is complete and when it is practical to do the construction necessary to raise the western levee. There may be overflow during emergency events until the project is complete and the western levee is raised.. .
S-332B North Seepage Reservoir	The north reservoir is the new 240-acre reservoir located to the north of the pump station with a weir discharging to the east. Normal operations will be targeted to achieve marsh restoration. However, this provision does not include a requirement to maintain water levels in the reservoirs during dry conditions by bringing water in from outside the drainage basin. This seepage reservoir will have a normal maximum depth of water of 2.0 feet. However, if the Corps determines that a flood emergency	The north reservoir is the new 240-acre reservoir located to the north of the pump station with a weir discharging to the east. Normal operations will be targeted to achieve marsh restoration. However, this provision does not include a requirement to maintain water levels in the reservoirs during dry conditions by bringing water in from outside the drainage basin. This seepage reservoir will have a normal maximum depth of water of 2.0 feet. However, if the Corps determines that a flood emergency

	No WCA-3A Regulatory Releases to SDCS or Shark Slough	WCA-3A Regulatory Releases to SDCS
	exists similar to an event like the “No Name” storm, the depth of water would be increased to 4.0 feet when possible.	exists similar to an event like the “No Name” storm, the depth of water would be increased to 4.0 feet when possible.
S-332B West Seepage Reservoir	<p>The west reservoir is the existing 160-acre reservoir and is to the west of the pump station. There will be no overflow into the Park when the project (i.e., the S-332B north seepage reservoir and the partial S-332B/S-332C connector) is complete and when it is practical to do the construction necessary to raise the western levee. There may be overflow during emergency events until the project is complete and the western levee is raised.</p> <p>Normal operations will be targeted to achieve marsh restoration. However, this provision does not include a requirement to maintain water levels in the reservoirs during dry conditions by bringing water in from outside the drainage basin.</p> <p>This seepage reservoir will have a normal maximum depth of water of 2.0 feet. However, if the Corps determines that a flood emergency exists similar to an event like the “No Name” storm, the depth of water would be increased to 4.0 feet.</p>	<p>The west reservoir is the existing 160-acre reservoir and is to the west of the pump station. There will be no overflow into the Park when the project (i.e., the S-332B north seepage reservoir and the partial S-332B/S-332C connector) is complete and when it is practical to do the construction necessary to raise the western levee. There may be overflow during emergency events until the project is complete and the western levee is raised.</p> <p>Normal operations will be targeted to achieve marsh restoration. However, this provision does not include a requirement to maintain water levels in the reservoirs during dry conditions by bringing water in from outside the drainage basin.</p> <p>This seepage reservoir will have a normal maximum depth of water of 2.0 feet. However, if the Corps determines that a flood emergency exists similar to an event like the “No Name” storm, the depth of water would be increased to 4.0 feet.</p>
<p>S332C</p> <p>The S-332C pump capacity is temporary. A new indicator will be established and a new gauge will be installed in Rocky Glades. Operations will be modified as necessary to achieve desired habitat conditions consistent with the restoration of Taylor Slough based on the C-111 GRR.</p>	<p>Pumped up to 575 cfs*</p> <p>On 5.00 Off 4.70**</p> <p>* Pump to capacity unless habitat conditions are not being achieved within the Rocky Glades. There will be no overflow into the Park.</p> <p>**If, after the first 30 days of operation, there is no observed drawdown at the pump, this stage level will be raised to 4.8</p>	<p>Pumped up to 575 cfs*</p> <p>On 4.8 Off 4.5</p> <p>* Pump to capacity unless habitat conditions are not being achieved within the Rocky Glades. There will be no overflow into the Park.</p>
S-332C Seepage Reservoir	<p>300 acres with overflow to the east</p> <p>Normal operations will be targeted to achieve marsh restoration. However, this provision does not</p>	<p>300 acres with overflow to the east</p> <p>Normal operations will be targeted to achieve marsh restoration. However, this provision does not</p>

	No WCA-3A Regulatory Releases to SDCS or Shark Slough	WCA-3A Regulatory Releases to SDCS
	<p>include a requirement to maintain water levels in the reservoirs during dry conditions by bringing water in from outside the drainage basin.</p> <p>This seepage reservoir will have a normal maximum depth of water of 2.0 feet. However, if the Corps determines that a flood emergency exists similar to an event like the “No Name” storm, the depth of water would be increased to 4.0 feet.</p>	<p>include a requirement to maintain water levels in the reservoirs during dry conditions by bringing water in from outside the drainage basin.</p> <p>This seepage reservoir will have a normal maximum depth of water of 2.0 feet. However, if the Corps determines that a flood emergency exists similar to an event like the “No Name” storm, the depth of water would be increased to 4.0 feet.</p>
S-332B/S-332C Connector	<p>141 acres partial 206 acres full 1,262 acres with the land swap</p> <p>Normal operations will be targeted to achieve marsh restoration. However, this provision does not include a requirement to maintain water levels in the reservoirs during dry conditions by bringing water in from outside the drainage basin.</p> <p>This seepage reservoir will have a normal maximum depth of water of 2.0 feet. However, if Corps determines that a flood emergency exists similar to an event like the “No Name” storm, the depth of water would be increased to 4.0'</p> <p>The Corps, FWS, ENP, and SFWMD will jointly develop a rule for emergency operations that is consistent with C-111 project purposes before the land swap B/C connector is used.</p>	<p>141 acres partial 206 acres full 1,262 acres with the land swap</p> <p>Normal operations will be targeted to achieve marsh restoration. However, this provision does not include a requirement to maintain water levels in the reservoirs during dry conditions by bringing water in from outside the drainage basin.</p> <p>This seepage reservoir will have a normal maximum depth of water of 2.0 feet. However, if Corps determines that a flood emergency exists similar to an event like the “No Name” storm, the depth of water would be increased to 4.0'.</p> <p>The Corps, FWS, ENP, and SFWMD will jointly develop a rule for emergency operations that is consistent with C-111 project purposes before the land swap B/C connector is used.</p>
S-332D	<p>Pumped up to 500 cfs from Jul 16 (or the end of the breeding season, as confirmed by FWS) to Nov 31; 325 cfs from Dec 1 to Jan 31; and 165 cfs* from Feb 1 to Jul 15. Meet Taylor Slough Rainfall formula consistent with marsh restoration (No L-31W constraint)</p> <p>On 4.85 Off 4.65</p> <p>*New information will be sought to evaluate the feasibility of modifying the 165 cfs constraint</p>	<p>Pumped up to 500 cfs from Jul 16 (or the end of the breeding season, as confirmed by FWS) to Nov 31; 325 cfs from Dec 1 to Jan 31; and 165 cfs* from Feb 1 to Jul 15. Meet Taylor Slough Rainfall formula consistent with marsh restoration (No L-31W constraint)</p> <p>On 4.7 Off 4.5</p> <p>*New information will be sought to evaluate the feasibility of modifying the 165 cfs constraint</p>

	No WCA-3A Regulatory Releases to SDCS or Shark Slough	WCA-3A Regulatory Releases to SDCS
Frog Pond Seepage Reservoir	<p>810 acres with overflow into Taylor Slough</p> <p>Normal operations will be targeted to achieve marsh restoration. However, this provision does not include a requirement to maintain water levels in the reservoirs during dry conditions by bringing water in from outside the drainage basin.</p> <p>This seepage reservoir will have a normal maximum depth of water of 2.0 feet. However, if Corps determines that a flood emergency exists similar to an event like the “No Name” storm, the depth of water would be increased to a maximum of 4.0 feet. However, a depth of 4.0 feet in the Frog Pond is not possible at this time due to the constraint of the S-332D pump station outlet elevation.</p>	<p>810 acres with overflow into Taylor Slough</p> <p>Normal operations will be targeted to achieve marsh restoration. However, this provision does not include a requirement to maintain water levels in the reservoirs during dry conditions by bringing water in from outside the drainage basin.</p> <p>This seepage reservoir will have a normal maximum depth of water of 2.0 feet. However, if Corps determines a flood emergency exists similar to an event like the “No Name” storm, the depth of water would be increased to a maximum of 4.0 feet. However, a depth of 4.0 feet in the Frog Pond is not possible at this time due to the constraint of the S-332D pump station outlet elevation.</p>
S-332	Closed	Closed
S-175	Closed	Closed
S-194	Open 5.5 Close 4.8	Operated to maximize flood control discharges to coast Open 4.9 Close 4.5
S-196	Open 5.5 Close 4.8	Operated to maximize flood control discharges to coast Open 4.9 Close 4.5
S-176	Open 5.0 Close 4.75	Open 4.9 Close 4.7
S-177	Open 4.2 (see S-197 open) Close 3.6	Open 4.2 (see S-197 open) Close 3.6
S-18C	Open 2.6 Close 2.3	Open 2.25 Close 2.00
S-197	<p>If S-177 headwater is greater than 4.1 or S-18C headwater is greater than 2.8 open 3 culverts</p> <p>If S-177 headwater is greater than 4.2 for 24 hours or S-18C headwater is greater than 3.1 open 7 culverts</p> <p>If S-177 headwater is greater than 4.3 or S-18C headwater is greater than 3.3 open 13 culverts</p> <p>Close gates when all the following conditions are met: 7. S-176 headwater is less than 5.2 and S-177 headwater is less than 4.2</p>	<p>If S-177 headwater is greater than 4.1 or S-18C headwater is greater than 2.8 open 3 culverts</p> <p>If S-177 headwater is greater than 4.2 for 24 hours or S-18C headwater is greater than 3.1 open 7 culverts</p> <p>If S-177 headwater is greater than 4.3 or S-18C headwater is greater than 3.3 open 13 culverts</p> <p>Close gates when all the following conditions are met: 7. S-176 headwater is less than 5.2 and S-177 headwater is less than 4.2</p>

	No WCA-3A Regulatory Releases to SDCS or Shark Slough	WCA-3A Regulatory Releases to SDCS
	<p>8. Storm has moved away from the basin</p> <p>9. After Conditions 1 and 2 are met, keep the number of S-197 culverts open necessary only to match residual flow through S-176. All culverts should be closed if S-177 headwater is less than 4.1 after all conditions are satisfied.</p>	<p>8. Storm has moved away from the basin</p> <p>9. After Conditions 1 and 2 are met, keep the number of S-197 culverts open necessary only to match residual flow through S-176. All culverts should be closed if S-177 headwater is less than 4.1 after all conditions are satisfied.</p>
S-356	When conditions permit (i.e., G-3273 and L-29 constraints), discharges from S356 will go into L-29. Pumping will be limited to the amount of seepage into L-31N in the reach between S-335 and G-211. A technical team will evaluate pumping limits and operations. The pumps will be operated accordingly.	When conditions permit (i.e., no S-334 regulatory releases and G-3273 and L-29 constraints), discharges from S356 will go into L-29. Pumping will be limited to the amount of seepage into L-31N in the reach between S-335 and G-211. A technical team will evaluate pumping limits and operations. The pumps will be operated accordingly.

Note: Prestorm drawdown will be the same as in the Oct 01 SDEIS with the additional language....

Operations for other than named events. SFWMD will monitor antecedent conditions, groundwater levels, canal levels and rainfall. If these conditions indicate a strong likelihood of flooding, SFWMD will make a recommendation to the Corps to initiate pre-storm operations. The Corps will review the data, advise ENP, FWS of the conditions, consult with the Miccosukee Tribe and make a decision whether to implement pre-storm drawdown or otherwise alter systemwide operations from those contained in the table.

Note: The Chairman of the Miccosukee Tribe of Indians of South Florida or his designated representatives, will monitor the conditions in WCA3A and other tribal lands and predicted rainfall. If the Tribe determines these conditions indicate jeopardy to the health or safety of the Tribe, the Chairman will make a recommendation to the Corps to change the operations of the S12 structures or other parts of the system. The Corps will review the data, advise appropriate agencies of the conditions, and the District Commander will personally consult with the Chairman prior to making a decision whether to implement changes to the S12 operations.

3.0 AFFECTED ENVIRONMENT

The Affected Environment described previously in the FEIS dated May 2002 provides a description of the existing conditions at the time the proposed project was evaluated and still serves as the basis for comparison. The information is incorporated by reference and is available for review <http://hpm.saj.usace.army.mil/issueweb/Sparrow/fiopeis.htm>.

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4.0 ENVIRONMENTAL CONSEQUENCES

4.1 Climate

None of the project alternatives would have any effect on climate. However, rainfall in south Florida during the period between 2002 and 2006 was characterized by a number of major storm events, particularly in the summer and fall of 2004 and 2005. In 2002, the Corps implemented three pre-storm operations; one in September, one in October, and one in December. The pre-storm events in 2003 occurred earlier in the year, with events in April, May, June, and September. 2004 saw four major hurricanes affect Florida, including the south Florida area. This pattern was repeated in 2005, with three major hurricanes directly affecting south Florida.

4.2 Geology and Soils

There would be no significant impacts to geology or soils with any of the project alternatives. No earth moving or construction activities are associated with Alternatives 1 through 5, and surface water patterns would not change to the degree that would cause any alterations in soils or groundwater recharge. Alternatives 6 and 7 would require some excavation with construction of a 240 acre seepage reservoir. However, exposure of the soils would be short-term, and impacts would be minor and temporary. Appropriate erosion and sedimentation control measures would be incorporated and applied to construction efforts. Additional construction would occur concurrently with Alternative 7R, but impacts associated with construction of those components were previously addressed under the C-111 and MWD NEPA documents.

4.3 Hydrology

To help visualize the changes to hydrology and performance measures, a large number of color figures were provided in the previous NEPA documents. However, there are many more figures that would be of interest on the website: www.saj.usace.army.mil on the Sparrow Issues page.

One of the performance measures of interest in the WCA is the number of weeks the water depth would be above 2.5 feet (relative to the average ground elevation). When reviewing this performance measure, it is important to remember that there are 1612 weeks in the modeling period of record (from 1965 through 1995). Under RPA02, for example, there were 566 weeks with depths greater than 2.5 feet as compared to 519 for the 95BaseMod2 condition and 475 weeks for Alternative 1 Alternative condition in southern WCA 3A. For this performance measure a lower number of weeks is the goal.

Reasonable and Prudent Alternative (RPA)

The RPA, as given, could not be directly implemented, because releases from S-333 are currently limited by high stage criteria at G-3273. Furthermore, higher canal stages in L-31N, as envisioned in Test 7 Phase II, depended upon the full use of the S-332D pump station. Under the FWS B.O., pumping volume at S-332D pump station was limited during the nesting season (165cfs instead of 500cfs). For example, the maximum stage reached in cell R17C27 would have been about 0.48 feet higher under RPA02 (7.16 feet) than in the 1995BaseMod2 condition (6.65 feet). It should also be noted that increasing the flows southward down L-31N, in addition to raising canal pump criteria, results in higher stages than simply raising the canal pump criteria alone. Under ISOP, additional water is moved down L-31N to help meet the S-333 release requirements. Under the RPA02, slightly more water would enter L-31N due to increased seepage from the higher stages in NESRS. The target flows for RPA02 were 60% of the regulatory release through S-333, when not limited by structural capacity, into NESRS. Although the RPAs could not be directly implemented, several RPAs were modeled to determine the desired hydrologic characteristics in the sparrow regions. RPA02 best represents the sparrow requirements for all the CSSS subpopulations. Detailed descriptions of the RPA model runs can be found on the Corps web site.

Alternative 2.

NESRS. The effect of Phase 1 of this alternative (IOP 2b) to the hydrology (water levels in the NESRS) is similar to the 95BaseMod and essentially the same as Alternative 1.

Phase 2 for Alternative 2 is IOP2. This plan removes the G-3273 trigger, which under the other alternatives either closes S-333 or routes the discharge (flood discharges) through S-334. With the trigger gone, discharges to NESRS from S-333 via L-29 and the Tamiami Trail culverts can be made when G-3273 is above 6.8 feet. For this alternative, hydrology for the area changes because the discharges through S-333 increase in some years. Annual average ponding depth increased by 0.5 feet during the wettest 15 percent of the time. Removing the trigger on S-333 would provide approximately 115,000 acre-feet/year more water to NESRS. The hydroperiod, as well as the mid-to-lower flow ranges, shows no significant change. CSSS subpopulation E shows a significant increase in the discontinuous hydroperiod in wet years but without an adverse impact to the nesting season consecutive dry days. CSSS subpopulation B shows no significant change. CSSS subpopulation F shows a dramatic increase in the discontinuous hydroperiod in wet years, but has an adverse impact to the consecutive dry days during the nesting season.

WSRS. The effect of Phase 1 of this alternative to the hydrology (water levels in the WSRS) is essentially the same as Alternative 1. However, the 6.0 feet criteria at NP-205 would be exceeded six times as opposed to five times for Alternative 1.

Phase 2 of this alternative does not change how the S-12s are operated but there is a reduction in the annual volume of flow because more flow is passed down the NESRS side from S-333 via L-29 and the Tamiami Trail culverts (trigger removed). The reduction is about 53,000-

acre feet (339,000 vs. 286,000 acre-feet). The 6.0 feet criteria at NP-205 would still be violated six times as opposed to five for Alternative 1.

WCA 1. WCA 1 would not be impacted by Alternative 2. Wet and dry season hydrologic characteristics would not change to any great degree.

WCA 2A and 2B. There is a change in the operation of these areas, as compared to Alternative 1 and 95BaseMod, which results in higher stages in WCA 2A and WCA 2B. This can be characterized by an increase in stage of about 0.4 to 1.3 feet and having about 63 more weeks of depths greater than 2.5 feet in WCA 2A. An increase in stage of about 0.2 to 0.8 feet and having an increase of more than 450 weeks over the three year period of depths greater than 2.5 feet occurs in WCA 2B.

WCA 3A and 3B. There is an increase in the number of depths greater than 2.5 feet (13 weeks) in the high stage criteria in these areas for Phase 1 of Alternative 2 as compared to Alternative 1 and 95BaseMod. For Phase 2 of this alternative, operation of S-333 changes with removal of the G-3273 gage trigger; subsequently, there is a slight reduction (4 weeks) in the number of depths greater than 2.5 feet.

Taylor Slough. The effect of Alternative 2 (both phase 1 and 2) on the hydrology of Taylor Slough is much the same as Alternative 1 and the 95BaseMod.

Lower East Coast Area. The effect of Phase 1 and Phase 2 of Alternative 2 to the hydrology is essentially the same as the 95BaseMod. However, in one cell (R20C28) there was an increase of about 0.75 foot in the stage at the highest 10th percentile in phase 1.

8.5 SMA. The effect of Phase 1 of Alternative 2 on the hydrology (water levels in 8.5 SMA) is the same as Alternative 1 and 95BaseMod. Phase 2 of Alternative 2 removes the trigger that would limit the operation of S-333 and allows greater discharges to the NESRS. With the 8.5 SMA project completion, the higher water levels in NESRS would not impact the 8.5 SMA. However, without the project, the duration of flooding would increase from about 1 to about 10 percent of time.

Biscayne Bay. The effect of Alternative 2, Phase 1, on Biscayne Bay would be to increase the wet seasons flows by about 20,000 acre-feet/year and the dry seasons flows by about 29,000 acre-feet. The effect of Alternative 2, Phase 2, on Biscayne Bay would be to increase the wet seasons flows by about 24,000 acre-feet/year and the dry seasons flows by about 6,000 acre-feet/year.

Florida Bay. The effect on Florida Bay of Alternative 2, Phase 1 is to reduce flows only slightly during June and July, but Phase 2 of Alternative 2 would reduce the flows by about 10 to 15 percent during the months of June, July and August.

Alternative 3.

NESRS. The effect of Phase 1 of this alternative (IOP 2a) to the water levels in the NESRS is similar to the 95BaseMod and essentially the same as Alternative 1.

Phase 2 for Alternative 2 is IOP2. This plan removes the G-3273 trigger, which under the other alternatives either closes S-333 or routes the discharge (flood discharges) through S-334. With the trigger gone, discharges to NESRS from S-333 via L-29 and the Tamiami Trail culverts can be made when G-3273 is above 6.8 feet. For this alternative, hydrology for the area changes because the discharges through S-333 increase in some years. Annual average ponding depth increased by 0.5 feet during the wettest 15 percent of the time. Removing the trigger on S-333 would provide approximately 107,000 acre-feet/year more water to NESRS. The hydroperiod, as well as the mid-to-lower flow ranges, shows no significant change. CSSS subpopulation E shows a significant increase in the discontinuous hydroperiod in wet years but without an adverse impact to the nesting season consecutive dry days. CSSS subpopulation B shows no significant change. CSSS subpopulation F shows a dramatic increase in the discontinuous hydroperiod in wet years, but has an adverse impact to the consecutive dry days during the nesting season.

WSRS. Phase 1 of this alternative discharges about 26 percent more flow into the area than Phase 2. Phase 2 of this alternative removes the trigger stage on S-333 and that causes an increase of flows into NESRS and a decrease of flows into the WSRS. However, the 6.0 feet criteria at NP-205 would be violated six times as opposed to five for the Alternative 1.

WCA 1. WCA 1 would not be impacted by Alternative 3. Wet and dry season hydrologic characteristics would not change to any great degree.

WCA 2A and WCA 2B. There is a change in the operation of these areas, as compared to Alternative 1 and 95BaseMod, which results in higher stages in WCA 2A and WCA 2B. This can be characterized by an increase in stage of about 0.4 to 1.3 feet and having about 63 more weeks of depths greater than 2.5 feet in WCA 2A. There would be an increase in stage of about 0.2 to 0.8 feet and an increase of more than 450 weeks over the three year period of depths greater than 2.5 feet in WCA 2B.

WCA 3A and WCA 3B. There is an increase in the number of occurrences of depths greater than 2.5 feet (46 weeks) in the high stage criteria in WCA 3A for Phase 1 of Alternative 2 as compared to Alternative 1 and 95BaseMod. For Phase 2 of this alternative, operation of S-333 changes with removal of the G-3273 gage trigger; subsequently, there is a small reduction (27 weeks) in the occurrence of depths greater than 2.5 feet.

Taylor Slough. The effect of Alternative 3 (both Phase 1 and Phase 2) on the hydrology in the Taylor Slough area is minimal and similar to Alternative 1 and the 95BaseMod conditions.

East Coast Agricultural Area. The effect of this alternative, Phase 1 and Phase 2, on the hydrology of the subject area is negligible. However, in two cells (R20C28 and C16R29) there were increases of about 0.7 foot in the stage at the highest 10th percentile in phase 1.

8.5 SMA. The effect of Phase 1 of Alternative 3 on the hydrology (water levels in 8.5 SMA) is the same as Alternative 1 and 95BaseMod. Phase 2 of Alternative 3 removes the trigger that would limit the operation of S-333 and allows greater discharges to the NESRS. With the 8.5 SMA project completion, the higher water levels in NESRS would not impact the 8.5 SMA. However, without the project, the duration of flooding would increase from about 1 to about 10 percent of time.

Biscayne Bay. The effect of Alternative 3, Phase 1, on Biscayne Bay would be to increase the wet season flows by about 13,000 acre-feet/year; the dry seasons flows would be about the same. The effect of Alternative 3, Phase 2, on Biscayne Bay would be to increase the wet season flows by about 24,000 acre-feet/year and the dry season flows by about 6,000 acre-feet/year.

Florida Bay. The effect on Florida Bay of Alternative 3, Phase 1 (like RPA102) is to reduce flows during June, July, and August by about 10 to 20 percent; Phase 2 of Alternative 3 would reduce the flows by about 10 to 15 percent during the months of June, July and August.

Alternative 4.

NESRS. The effect of Phase 1 of this alternative (IOP 3a) to the water levels in the NESRS is similar to the 95BaseMod and essentially the same as Alternative 1.

Phase 2 for Alternative 4 is IOP3. This plan removes the G-3273 trigger and discharges to NESRS from S-333 via L-29 and the Tamiami Trail culverts. For this alternative, hydrology for the area changes because the discharges through S-333 increase in some years. Annual average ponding depth increased by 0.5 feet during the wettest 15 percent of the time. Removing the trigger on S-333 would provide approximately 109,000 acre-feet/year more water to NESRS. The hydroperiod, as well as the mid-to-lower flow ranges, shows no significant change. CSSS subpopulation E shows a significant increase in the discontinuous hydroperiod in wet years but without an adverse impact to the nesting season consecutive dry days. CSSS subpopulation B shows no significant change. CSSS subpopulation F shows a dramatic increase in the discontinuous hydroperiod in wet years, but also a significant adverse impact to the consecutive dry days during the nesting season.

WSRS. Under phase 1 of this alternative, the overall flow to the area is slightly reduced because of the early S-12 closures. In Phase 2, this impact is increased – the stage duration is decreased from 73 to 67%, the wet season stages are reduced by about 0.25 feet, and dry downs (stages < -1 foot) are increased from 172 to 195 events. With the earlier closing of the S-12s, the dry season flows are reduced to 10% of all other alternatives.

The number of predicted failures at NP-205 is five – the same as Alternative 1. Unlike Alternative 1, the S-343 (A&B), S-344, and all S-12s would be closed from November 1 until July 15. Also unlike Alternative 1, the complete closure of the WCA 3A outlets into WSRS would have significant impacts within WCA 3A (addressed below).

WCA 1. WCA 1 would be impacted by Alternative 4. An increase of 0.2 foot in the regulatory schedule resulted in high frequency of depths greater than 2.5 feet.

WCA 2A and WCA 2B. There is a change in the operation of these areas, as compared to Alternative 1 and 95BaseMod, which results in higher stages in WCA 2A and WCA 2B. This can be characterized by an increase in stage of about 0.4 to 1.3 feet and having about 63 more weeks of depths greater than 2.5 feet in WCA 2A. An increase in stage of about 0.2 to 0.8 feet and having an increase of more than 450 weeks of depths greater than 2.5 feet in WCA 2B.

WCA 3A and WCA 3B. The combination of earlier closure of the S-12s and not passing water to L-31N dramatically increases the stages in the south and the south central areas of WCA 3A. For Phase 1, the depths greater than 2.5 feet increase by about 90 weeks for the south region (only RPA102 was worse) and by 72 weeks in the south central region (as compared to Alternative 1 and the 95BaseMod). For Phase 2, the depths greater than 2.5 feet increase by about 24 weeks for the south region and by about 37 weeks in the south central region (over Alternative 1 and the 95BaseMod). Most of the highest stage increases (0.5 to 1.0 foot) occurred in wet years like 1995. For WCA 3B, the stage increases were not significant, however the depths greater than 2.5 feet increased from 2 to 6 weeks for both Phase 1 and 2 (over Alternative 1 and the 95BaseMod).

Taylor Slough. The effect of Alternative 4 (both Phase 1 and Phase 2) on the hydrology in the Taylor Slough area is minimal and similar to Alternative 1 and the 95BaseMod conditions.

East Coast Agricultural Area. Alternative 4 shows no significant pattern changes to the stages in the subject area.

8.5 SMA. The effect of Phase 1 of Alternative 4 on the hydrology (water levels in 8.5 SMA) is the same as Alternative 1 and 95BaseMod. Phase 2 of Alternative 4 removes the trigger that would limit the operation of S-333 and allows greater discharges to the NESRS. With the 8.5 SMA project completion, the higher water levels in NESRS would not impact the 8.5 SMA. However, without the project, the duration of flooding would increase from about 1 to about 10 percent of time.

Biscayne Bay. The effect of Alternative 4, Phase 1, on Biscayne Bay would be to increase the wet season flows by about 14,000 acre-feet/year and the dry season flows would be about the same. The effect of Alternative 4, Phase 2, on Biscayne Bay would be the to increase the wet season flows by about 26,000 acre-feet/year and the dry season flows by about 9,000 acre-feet/year.

Florida Bay. The effect on Florida Bay of Alternative 4, Phase 1 is to reduce flows during June, July, and August by about 10 to 25 percent; Phase 2 of Alternative 4 would reduce the flows by about 10 to 15 percent during the months of June, July and August. With the earlier closures of the S-12s and not passing S-333 releases to L-31N, the Phase 1 flows to Florida Bay are significantly less in several months when compared to Alternative 1. Phase 2 flows to Florida Bay are slightly more than Alternative 1 during October and November, but slightly

less than Alternative 1 in June and July. The Phase 1 and 2 flows to Whitewater Bay, via Shark River Slough, are less than Alternative 1 during November through February. These areas have already been subject to reduced flows due to the implementation of ISOP; closing on November 1 would further increase the adverse impact on salinity.

Alternative 5.

NESRS. Alternative 5, Phase 1, is similar to Alternative 1 with regard to impacts on NESRS, except there is about a 0.1 foot decrease in stages for about 30 percent of the time. One of the primary differences between this alternative and Alternatives 2, 3, and 4 was allowing S-12D to remain open all year. In Phase 2 (as in the other alternatives), the constraint at G-3273 is removed. Annual average ponding depth increased by 0.5 feet during the wettest 15 percent of the time. Removing the trigger on S-333 would provide approximately 103,000 acre-feet/year more water to NESRS. The hydroperiod, as well as the mid-to-lower flow ranges, shows no significant change.

Unlike Alternative 1, Alternative 5 also changes the pump criteria in L-31N to improve the hydrologic characteristics for the eastern sparrow regions. This is most noticeable in CSSS subpopulation F which shows a dramatic increase in the discontinuous hydroperiod in wet years, but indicates a less adverse impact to the consecutive dry days during the nesting season than in Alternatives 2,3, and 4. CSSS subpopulation E shows a significant increase in the discontinuous hydroperiod in wet years without an adverse impact to the nesting season consecutive dry days. CSSS subpopulation B shows no significant change.

WSRS. Alternative 5 would be similar to Alternative 1 with regard to impacts to WSRS. The proposed closing schedule for the S-12 structures is the same for Alternative 5 as with Alternative 1. The number of predicted failures in the 31year period of record at NP205 is the same (five) as with Alternative 1 and RPA130.

WCA 1. WCA 1 would not be impacted by Alternative 5. Neither wet nor dry season hydrologic conditions would change from Alternative 1 or the 95BaseMod.

WCA 2A and WCA 2B. Alternative 5 does not significantly change the hydrologic characteristics of either WCA 2A or WCA 2B from Alternative 1 or the 95BaseMod.

WCA 3A and WCA 3B. The preliminary stage duration curves indicate that Alternative 5, Phase 2, would slightly increase water levels (about 0.2 foot) with an increase in depths greater than 2.5 feet of 25 weeks out of the 1,612 weeks modeled in WCA 3A over Alternative 1 and Phase 1. However, the total number of weeks is still less than or equal to the 95BaseMod condition. Similarly, a stage increase of about 0.3 feet (closer to NSM stages) without significant increase to depths greater than 2.5 feet occurred in WCA 3B. The final model runs are expected to show a decrease in water levels from Alternative 1 and Phase 1.

Taylor Slough. The effect of Alternative 5 is essentially the same as with Alternative 1.

East Coast Agricultural Area. Alternative 5 shows no significant pattern changes to the stages in the subject area.

8.5 SMA. The effect of Alternative 5 is the same as with Alternative 1 on this area.

Biscayne Bay. The effect of Alternative 5 is negligible when compared to the Alternative 1.

Florida Bay. The effect of Alternative 5 is similar to Alternative 1 on this area but has about 10 percent less flow during the months of June, July, and August.

Alternative 6.

Alternative 6 is essentially the same as Alternative 5 with the addition of a 240 acre seepage reservoir at S-332B to supplement the existing 160 acre reservoir.

NESRS. There are no proposed changes that would affect NESRS; Alternative 6 is expected be similar to Alternative 1 with regard to impacts on NESRS. In Phase 2 (as in the other alternatives), the constraint at G-3273 would be removed. However, changes would occur with regard to the amount of overflow potentially impacting the CSSS subpopulations E and F. The increase in size of the seepage reservoir would significantly reduce, weir overflow from the water pumped from S-332B.

WSRS. There are no proposed changes that would affect WSRS; Alternative 6 is expected to be similar to Alternative 1 with regard to impacts to WSRS. The proposed closing schedule for the S-12 structures is the same for Alternative 6. As with Alternative 1, this schedule would attempt to dry the area out by March 1, but five periods of less than 60 days below 6.0 feet at NP-205 are predicted.

WCA 1. There are no proposed changes to the operations of WCA 1; it is not expected be impacted by Alternative 6.

WCA 2A and WCA 2B. There are no proposed changes to the operations of WCA 2A or 2B; they are not expected be impacted by Alternative 6.

WCA 3A and WCA 3B. There are no proposed changes to the operations of WCA 3A or 3B; they are not expected be impacted by Alternative 6.

Taylor Slough. The effect of Alternative 6 is expected to be essentially the same as with Alternative 5.

East Coast Agricultural Area. Alternative 6 should show no significant pattern changes to the stages in the subject area.

8.5 SMA. The effect of Alternative 6 would be the same as Alternative 5 in this area.

Biscayne Bay. The effect of Alternative 6 would be negligible compared to Alternative 5.

Florida Bay. The effect of Alternative 6 is the same as Alternative 5 in this area.

Alternative 7.

Because Alternative 7 represents a dual mode operation (i.e. changing between two L-31N canal levels depending on hydrologic conditions), it could not be modeled directly using the SFWMM version 3.8. To evaluate the results of this alternative, the model was run in both modes (no passing of flood flows down L-31N with higher pumping triggers and passing of flood flows down L-31N with lower pumping triggers). These two model runs, termed ALT 7a and ALT 7b, represent the range of potential impacts associated with either mode. Performance measures that show both wet and dry year effects can be further evaluated knowing the dry years would be more indicative of model run termed ALT 7a and the wet years would be more indicative of model run termed ALT 7b. The actual benefit or impact would be represented between the two extremes in some areas, or be more like only one extreme in other areas. For example, in the WCA 3A the true impact would be the same as ALT 7b (since water would be moved to L-31N and no other changes would effect this region). For another example, the true impact in the eastern sparrow regions would more likely be the averaged effect of both ALT 7a and ALT 7b.

It should be noted that the model runs termed ALT 7a and 7b do not represent a two-phase implementation, but rather an attempt to provide the bounds of effects of the dual mode operation of L-31N in Alternative 7. In many areas, there is little difference between the two model runs that, together, represent the effects of the range of operations in Alternative 7.

NESRS. Alternative 7 is similar to Alternative 1 in regard to impacts on NESRS (SDEIS A-62); however, Alternative 7 has 5 fewer dry downs over the 31 years compared to Alternative 1. Alternative 7 supplies about 133,000 acre-feet/year into NESRS whereas Alternative 1 and RPA02 supply 126,000 and 210,000 acre-feet/year, respectively (SDEIS A-87). Although the amount delivered into NESRS is less than RPA02, Alternative 7 would not cause the significant flooding impacts that could occur in RPA02 in the 8.5 SMA.

No significant differences are shown between Alternative 7 and Alternative 1 in CSSS subpopulations B, D, and E (SDEIS A-72 to A-75 and A-78 to A-83). In those cases, Alternative 7 meets or exceeds the requirements of RPA02. In subpopulations C and F (SDEIS A-75 to A-77 and A-84 to A-86), Alternative 7 average stages, durations, and discontinuous hydroperiod of ALT 7a and ALT 7b would be slightly less than Alternative 1 but still meet or exceed the RPA02 requirements.

WSRS. Alternative 7 would result in slightly wetter conditions, compared to Alternative 1, with regard to impacts to WSRS (SDEIS A-64 and A-65). Although the closing schedule for the S-12 structures is similar to Alternative 1, about 36,000 acre-feet more water would be passed through the region from WCA3A (SDEIS A-87).

The stages and stage duration of Alternative 7 (both ALT 7a and ALT 7b) are similar to Alternative 1 and show conditions drier than those of RPA02 (SDEIS A-66 to A-71), which,

in this indicator region, is an improvement. The number of predicted nesting failures in the 31-year period of record at NP205 is the same (five) as under both Alternative 1 and RPA02.

WCA 1. Alternative 7 would not impact WCA 1 (SDEIS A-48 and A-49). Neither wet nor dry season hydrologic conditions would change from Alternative 1.

WCA 2A and WCA 2B. Alternative 7 would not significantly change the hydrologic characteristics of either WCA 2A or WCA 2B from Alternative 1.

WCA 3A and WCA 3B. The preliminary stage duration curves indicate that Alternative 7, would be similar Alternative 1 for ALT7b which represents moving water to L-31N from WCA 3A during high stages (SDEIS A-54 to A-57). Without the moving of water to L-31N, there would be an increase in the number of weeks of high stages in WCA 3A; however there would likely be a decrease in the weeks of high stages as shown by ALT 7b. In WCA 3B, there is likely to be a slight reduction in the number of weeks of high stages (SDEIS A-58 and A-59).

Taylor Slough. The effect of Alternative 7 is essentially the same as with Alternative 1.

East Coast Agricultural Area. SFWMM analysis of Alternative 7 shows no significant pattern changes to the stages in the subject area (SDEIS A-92). Alternative 7 shows no increases in the peak stage values. However, comments received on behalf of the Greater Homestead/Florida City Chamber of Commerce indicated that operating levels for structures serving the L-31N canal would be raised from 0.2 to 0.5 feet above current operating levels, which could lead to higher water tables in the area adjacent to the canal. As previously mentioned, the SFWMM predicts changes over 2-mile square grids, so localized higher ground water tables would not necessarily be evident. Based on this information, water levels in these areas could be higher with Alternative 7 than with ISOP 2001 during high rainfall periods.

8.5 SMA. The effect of Alternative 7 is the same as with Alternative 1 in this area.

Biscayne Bay. The effect of Alternative 7 is negligible to Biscayne Bay areas, when compared to Alternative 1, except for the South Bay region. In South Bay, there is likely to be a slight decrease (compared to Alternative 1) of about 26,000 acre-feet/year in surface flows. However, this would still represent more freshwater flow than the 1995 Base condition.

Florida Bay. The effect of Alternative 7 would be similar to Alternative 1. ALT 7a shows less flow during all months, whereas ALT 7b shows about the same flow for all months. Considering the average of ALT 7a and ALT 7b, there is likely to be only a slight reduction in flows toward Florida Bay.

Alternative 7R (Recommended Alternative)

Alternative 7R, like Alternative 7, has a dual-mode operation in L-31N; hence trigger levels at key structures vary according to whether or not water is being passed from WCA 3A into L-31N. Although some structure trigger levels in South Dade are somewhat higher than the Existing condition and slightly higher than the 1995 Base, more storage (in the form of seepage reservoirs) is provided in Alternative 7R. At the completion of construction, no overflow would be passed from the seepage reservoirs to the ENP.

In Alternative 7R, pre-storm drawdown would be similar to Alternative 7, except for operations related to other than named events. For those events, the SFWMD would monitor antecedent conditions, groundwater levels and rainfall. If these conditions indicated a strong likelihood of flooding, SFWMD would make a recommendation to the Corps to initiate pre-storm drawdown or otherwise alter system-wide operations from those contained in the Table 2.11.

The Chairman of the Miccosukee Tribe of Indians of South Florida or his designated representatives, would monitor the conditions in WCA-3A and other tribal lands and predicted rainfall. If the Tribe determines these conditions indicate jeopardy to the health or safety of the Tribe, the Chairman would make a recommendation to the Corps to change the operations of the S-12 structures or other parts of the system. The Corps would review the data, advise appropriate agencies of the conditions, and the District Commander would personally consult with the Chairman prior to making a decision whether to implement changes to the S-12 operations.

It is recognized that new technical information may be developed as this plan is implemented and that observed results may differ from predicted results. Considering this, it may be necessary to adjust operations to address the new information or observed results to achieve better performance for environmental restoration and protection, to ensure the health, safety, and well being of the general public, and ensure affected individuals are protected.

NESRS. Alternative 7R were similar to Alternative 1 with regards to hydrologic conditions in NESRS. Pumping at the newly constructed S-356 structure was limited to values that did not show impact in the 8.5 Square Mile Area (see below). The pumped excess water from L-31N (north of G-211) into NESRS provided an improvement in high canal stages during the wettest 5 percent of the time.

The stages in CSSS subpopulation E exceeded the requirements of the RPA by increasing the discontinuous hydroperiod while not reducing the nesting season. The stages in CSSS subpopulation F met the requirements of the RPA by increasing the discontinuous hydroperiod while maintaining sufficient dry conditions in the nesting season. The effect of the S-332D seepage reservoirs slightly decrease the stages in the CSSS subpopulation C with a concurrent reduction of nesting season. However, if an increase in stages in subpopulation C is desired by the FWS, culverts could be used to increase the stages in L-31W thereby improving the conditions subpopulation C. The effect of the S-332D seepage reservoirs

slightly decreased the stages in the CSSS subpopulation D but were conditions were still drier than the 95 Base conditions.

WSRS. Alternative 7R had similar flows into WSRS due to the operations of the WSE Lake Okeechobee schedule and the operational considerations of Miccosukee Tribal recommendations. No increases in the discontinuous hydroperiod or number of nesting season failures during the critical nesting period of the CSSS subpopulation A were evident.

WCA 1. Alternative 7R showed no impact in WCA 1.

WCA 2A and WCA 2B. Alternative 7R showed no impact in WCA 2A and WCA 2B.

WCA 3A and WCA 3B. Alternative 7R showed no significant increase over existing conditions in eastern or southern WCA 3A. The effect of opening the S-12s as a result of Tribal considerations (not modeled) could improve the conditions in southern WCA 3A. No significant changes were noted in WCA 3B.

Taylor Slough. Under Alternative 7R, the effect of pumping into seepage reservoirs from S-332D slightly increased the average and drier stages in Taylor Slough. The high stage conditions exhibited no change. Should it become necessary, as determined by the ENP, culverts could be used to increase the stages in L-31W thereby improving the conditions in Taylor Slough.

East Coast Agricultural Area. The highest stages in L-31N above S-176 were similar to existing conditions for the wettest 2 percent of the time (when stages were above 5.0 ft.). Average to wet conditions were higher than existing conditions, but similar to the 95 Base conditions. Only one indicator cell (from the model) showed a peak stage increase of 0.2 ft, while no other significant peak stage increases were noted. Because no clear stage increase trend occurred in the region, monitoring and operational testing for a single cell (north and east of S-176) would be sufficient to deal with the potential issue.

8.5 SMA. Alternative 7R was similar to Alternative 1 conditions since the pumping limitation at G-3273 is still used to restrict releases into NESRS. Neither modeling cell (representing the 8.5 SMA in the model) showed stage increases.

Biscayne Bay. With the higher L-31N trigger levels in Alternative 7R (in the southern reach), flows were reduced (compared to existing conditions) in the southern part of the bay (closer to target). However, the rest of the Bay areas had slight increases.

Florida Bay. With the exception of October and November, flows southward into to Florida Bay either slightly increased or were similar to the existing conditions. Flows westward through Shark River Slough showed improvement.

4.4 Water Quality

IOP 2002 to 2006

Water management activities have been operating under IOP since it was implemented in August 2002. Water quality has been monitored extensively to ensure that the system was operating under the parameters of the Settlement Agreement in *United States v. South Florida Water Management District*, in particular legal requirements for ENP at SRS and Taylor Slough. No significant change in phosphorus load for the inflow structures to the SRS, Taylor Slough, and Coastal Basins occurred during IOP; however, there have been occurrences of increases in phosphorus concentrations for some of the SRS inflow structures.

The flows entering the SRS have been in compliance with interim discharge limits for phosphorus from 2002 to include the most recently calculated flow weighted concentration (2005). The long term concentration limit (to be in force December 31, 2006) has not been met during this time period for 2003 and 2005 but was attained for 2004. The phosphorus compliance target varies for the SRS are based on the total flow during the water year. The formula to determine this compliance target for the SRS is flow dependent (see appendices of the Settlement Agreement). High flows (wet year) through the SRS compliance structures (S333, S12A, S12b, S12C and S12D) tend to lower the phosphorus target number and the phosphorus target number is higher during a dry year. The other element to determine compliance with the Settlement Agreement for SRS is that number of individual samples cannot exceed a certain % (determined by a formula in the Settlement Agreement) in any given 12 month period.

Discharges to Taylor Slough and the Coastal Basins have been in compliance with the Settlement Agreement requirements for the period of discussion (Aug 2002 through May 2006). The Settlement Agreement establishes the method for determining non-degradation of the Taylor Slough and Coastal Basin with regards to total phosphorus and requires compliance be determined on a regular basis (flow weighted concentration determined on a yearly basis with the water year ending 30 Sept) and compared to a fixed number. The Settlement Agreement also requires that no more than 53.1% of the individual samples exceed 10 ppb for total phosphorus. The flow weighted phosphorus target (long term discharge limit) is 11 ppb which is compared against the flow weighted concentration (Figure 5 and Figure 6). There were four overflow events at the S-332B detention area; two events in 2003 and two events in 2005, but none of the events were considered significant in terms of phosphorus loading. Yearly flows into the Taylor Slough/Coastal Basins are on the order of approximately 3,000,000 acre-ft. The first discharge in 2003 (May 30), a single day event, resulted in an overflow volume of 36.46 acre-feet. Phosphorus levels of 12 to 10 ppb were taken at the emergency weir overflow into ENP sample location the weeks prior to and after the overflow event. The second event in 2003 (September 30), a single day event, resulted in an overflow volume of 143 acre-ft. Phosphorus levels did not exceed 7 ppb prior to the event, and the sample collected the day of the overflow event measured 12 ppb. The first overflow event in 2005 (August 26 to September 5) was associated with hurricane Katrina and resulted in an overflow volume of 9,270 acre feet for the 11 day period. This overflow event occurred due to instrumentation failure likely caused by the hurricane and the overflow event was

stopped within one day of confirming the overflow was occurring. Inflow samples taken in the canal at the S-332B pump station during the first 2005 overflow event were all below 7 ppb. The second overflow event in 2005 occurred for approximately one hour in 2005 (December 13) and resulted in an overflow volume of 0.07 acre-ft. Due to the short duration of the overflow, no sample was collected. However, data collected at the canal the following day resulted in phosphorus concentrations at or below 10 ppb.

Taylor Slough and Coastal Basins. Once the C-111 detention basin is fully constructed and operational it is expected that less seepage water from ENP will reach the L31N canal. Seepage water from the ENP is generally understood by all parties to be cleaner than the L31N canal water. This will result in less dilution of the L31N canal water from the cleaner ENP seepage input. Due to the reduction of ENP seepage input to the L31N canal, the L31N water quality will be degraded to some degree. However, overflows into the ENP from the C111 detention system from S-332B to S332C will not be allowed under the present construction configuration except under extreme environmental conditions.

From 2002 to the present, overflows from the S332B have been minor (flow quantities) relative to the other components of the system monitored for settlement agreement compliance for the Taylor Slough/Coastal Basins. The specifics for the S332B overflows into the ENP are presented in the previous section. Once the C111 system is fully built out, surface discharges into the ENP from the S-332B to S332C part of the system are very unlikely to occur. Since surface water overflow from the fully built out C-111 detention system (S332B through S332C) to the ENP is extremely unlikely, the composition of the L31N canal water quality should not be an issue relative to potential surface water discharges.

During the prior NEPA process, DOI expressed concern with surface water overflow into ENP from the C-111 basin (Taylor Slough is the receiving water body). The Corps recognizes there is a future potential for degraded water quality in the L31N canal based on the likelihood of increased population density/urbanization in the vicinity of the L31N drainage zone and reduced seepage from the ENP. Corps staff position is that the water quality in the C-111/Coastal basin area is generally not a problem at this time. It is recognized that extremely high rainfall events can mobilize large quantities of nutrients into the L31N canal under some conditions. Regardless of whether a cost effective phosphorus reduction system can be incorporated within the fully built out C-111 detention system, the risk of surface water overflows from this detention system onto ENP lands is low based on Corps modeling and best professional judgment. Since surface water discharge into the ENP is unlikely, the fact that low level phosphorus removal has not been cost effectively demonstrated at this point is not a concern for this feature.

Specifics of the overflows in the period of July 2002 to the present, from the S-332B West detention are discussed earlier in the WQ section (IOP 2002-2006 heading). Essentially overflows were minor relative to the flows at the other Taylor Slough/Coastal Basin flow. The P concentration in these overflows did not exceed 14 ppb and was generally below 10 ppb.

Shark River Slough. As previously stated, the flows entering the Shark River Slough (SRS) under IOP since 2002 have been in compliance with interim discharge limits for phosphorus . The most recentl (2005) yearly interim concentration was 9.4 ppb which is the same as the limit calculated in accordance with the Settlement Agreement guidance. The long term concentration limit was not met during this time period for water years 2003 and 2005 but was attained for 2004, and it is expected to be met in the future. Nutrient loading problems in WCA 3A and other C&SF features upstream of the SDCS (the IOP project area) cannot be addressed by IOP. Operational adjustments within the IOP project area can shift nutrient loads within the limits of many constraints (i.e., flooding concerns, endangered species concerns, water supply concerns, recreational concerns, minimum deliveries/desired deliveries to ENP, etc.). Please see Figures 7 - 9 (page 7 extracts from the Settlement Agreement Compliance reports for Jan-Mar 2004 and Jan-Mar 2005). By observing the period of record from May 2002 until present, noting the SRS settlement agreement report graphics that present the 12 month moving average (navy blue line), no discernable pattern is seen that indicates nutrient loading or concentration is increasing during the IOP period. Therefore, Alternative 7R is not expected to be the causal agent that will adversely affect water quality in SRS.

It should be noted that IOP (or any other operational plan) could cause an undesirable release of nutrients within WCA 3A into the water column for subsequent transfer into the ENP SRS. This would occur by allowing the stages within WCA 3 to become too low, resulting in dry-outs and subsequent oxidation and release of accumulated nutrients into the water column, from the accumulated organic material. It does not appear that IOP is causing stages in WCA 3 to be lower than previous operational regimes but the period of record is too short to determine that. It is more likely that levels in WCA 3 are more influenced by the Atlantic Multi-decadal Oscillation (multi year wet and dry periods) as suggested by NOAA.

As the BMP program (State of Florida nutrient load reduction program, best management practices (BMP)) continues to make progress with reducing loads released from the EAA and the STA's come fully on line and are upgraded, nutrient loads to the EPA are expected to decrease. Lake Okeechobee has an enormous internal nutrient load accumulated during prior decades that will take a significant time period, possibly on the order of 20 years, to remove and or stabilize, so that the nutrient loads exported from Lake Okeechobee are not likely to be quickly reduced in the near term. These factors cannot be influenced significantly by downstream operational regimes such as IOP.

4.5 Flood Control

IOP Performance 2002 to 2006

To evaluate the performance of IOP during high water events in South Dade, the actual stage in the three reaches of L-31N during IOP operations was reviewed. These reaches were selected for review since they directly represent the operations of the primary water control features that provide water management of stages between the natural areas (in ENP) and the developed areas (including agriculture). The discussion below references the observed data and the modeled data as presented in Figures 10 to 15.

Upper reach of L-31N. The predicted (or modeled) stages in the upper reach of L-31N (see Figure X-1), show the stages generally vary between 4.0 ft (in dry times) to occasional peaks of about 6.5 ft, with a maximum of about 7.4 ft (in 1981 due to Hurricane Dennis). One month following the 1981 Hurricane Dennis peak a smaller peak occurred due to Hurricane Gert that had a peak a little over 6.5 ft. Figure 10 shows the predicted (modeled) stages over the period 1965 to 1995.

By reviewing the observed stages shown in Figure 11, the same pattern is apparent – although on a different time scale (August, 2002, to April, 2005). Again, the stages generally vary between 4.0 ft (in a dry time) to occasional peaks of about 6.5 ft with a maximum of about 7.4 ft (in 2005 due to Hurricane Katrina). This comparison of the predicted stages to the observed results show a striking similarity. This indicates that the stages predicted by IOP modeling have been accurate for both wet and dry times. The 2005 Hurricane Dennis (not the same as the 1981 Hurricane Dennis) had a peak similar to the 1981 peak of Hurricane Gert. Clearly, the predicted high stages in L-31N – and therefore, the predicted flood control capabilities – are consistent with the actual management of the canal levels.

Middle reach of L-31N. The predicted (or modeled) stages in the middle reach of L-31N (see Figure 12) show the stages generally vary between 3.5 ft (in dry times) to occasional peaks up to about 6.5 ft, with a maximum of about 7.8 ft (in 1981 due to Hurricane Dennis).

The observed stages in the middle reach of L-31N (see Figure 13) show the stages generally vary between 4.0 ft (in dry times) to up to about 6.5 ft, with a maximum of about 7.4 ft (in 2005 due to Hurricane Katrina). In this reach, it appears the actual operations are similar with extremes slightly better (not as low and not as high) than the predicted stages.

Lower reach of L-31N. The predicted (or modeled) stages in the lower reach of L-31N (see Figure 14) show the stages generally vary between 3.5 ft (in dry times) to occasional peaks up to about 6.0 to 6.5 ft, with a maximum of about 7.8 ft (in 1981 due to Hurricane Dennis).

The headwaters of the S-176 structure are essentially the same as the headwaters of the S-174 in Figure 15. The observed stages in the middle reach of L-31N (see Figure 13) show the stages generally vary between 3.5 ft (in dry times) and about 5.0 ft, with a maximum of about 6.7 ft (in 2005 due to Hurricane Katrina). In this reach, it appears the actual operations are similar with extremes slightly better (not as low and not as high) than the predicted stages.

Summary. The actual flood control capability within IOP is consistent with the modeling results. The observed high stages in the L-31N canal system are maintained at levels similar to or slightly below the high stages predicted by IOP modeling.

4.6 Wetlands

Wetlands in NESRS, the Rocky Glades, and the western marl prairies are expected to benefit from the restoration of more natural hydroperiods with Alternative 7R, whereas increased flooding in southern WCA 3B and WCA 2A may contribute to negative wetland impacts. As

previously discussed in Section 4.3, hydrologic conditions since the implementation of IOP in August 2002 were as predicted with the previous model runs.

4.7 Vegetation

NESRS

Increases in ponding depths and hydroperiod duration associated with Alternative 7R should benefit vegetative communities in NESRS and the northeastern marl prairies by restoring longer and more natural hydrologic regimes to the area. Over-drainage in the peripheral wetlands along the eastern flank of NESRS has resulted in shifts in community composition, invasion by exotic woody species, and increased susceptibility to fire (USFWS 1999a,b). Increases in ponding depths and hydroperiod duration associated with Phase 2 operations should help to reverse these trends by reducing tree island susceptibility to fire, restoring deeper water habitats required for slough/open water marsh communities, and reducing the amount of available habitat for less flood tolerant exotic tree species.

WSRS and Western Marl Prairies

The WSRS area is primarily influenced by S-12 structure operations. Consequently, any changes in WSRS hydroperiods and resulting shifts in vegetative communities would be similar under each of the alternatives. Each of the alternatives would result in a similar reduction of annual flooding duration in WSRS and the western marl prairies relative to 1995 Base conditions. All of the alternatives should have a similar beneficial effect on the western short-hydroperiod marl prairies by producing shorter hydroperiods that would benefit marl prairie vegetation. The westernmost S-12 structures (A, B, and C) would be closed November 1, January 1, and February 1, respectively. S-12D, which has the least impact of the western sparrow habitats, would remain open year round to allow excess water to leave the WCA areas.

WCA 2

In comparison to 1995 Base conditions, all of the alternatives could produce substantial increases in the duration of high stage events in WCA 2B. Historically, WCA 2B has suffered from lowered water levels that resulted in heavy melaleuca infestations throughout the area (USACE 1999a). According to the FWC, the majority of melaleuca stands have been eliminated from WCA 2B. Increases in the duration of high stage events in WCA 2B could benefit vegetative communities by preventing re-establishment of melaleuca in the area. In recent years, WCA 2B has suffered from extreme high water conditions. In the past, high water levels have severely damaged native willow communities that provide nesting and roosting for snail kites and wading birds. Closing of the S-12 structures with all alternatives could exacerbate this problem. If the duration of inundation were too high, adverse impacts could occur to vegetation and tree islands in the area.

Alternatives 2 and 3 would produce very similar hydrological conditions in WCA 2. Average annual flooding duration and ponding depths are not significantly different for the two alternatives. These alternatives reduce flooding impacts to WCA 3A by holding back water in

WCA 2A. In comparison to 95BaseMod conditions, Alternatives 2 and 3 produce substantial increases in the frequency and depth of high water events in WCA 2A. Past increases in flooding in WCA 2A have resulted in the drowning of tree islands, loss of long-hydroperiod wet prairie communities, and loss of sawgrass marshes along sloughs (USACE 1999a). Increases in flooding associated with the alternatives are likely to have an adverse impact on tree islands and other wetland communities in WCA 2A. Adverse affects may include loss of remnant tree islands, conversion of short hydroperiod wetlands to low-diversity sawgrass-cattail marshes, and conversion of long hydroperiod marshes to open water slough.

Alternative 4 would have an even greater adverse impact on WCA 2. Alternative 4 actions include closing the S-12 and S-343/344 structures from November 1 to July 15, which would cause additional water retention in WCA 2A and would lead to loss of more tree islands, wet prairie communities, and other habitat.

Alternatives 5 and 6 (as well as Alternative 1), close one of the S-12 structures (S-12A) earlier than Alternatives 2 and 3, the same with S-12B and S-12C, and do not close S-12D. The result of this would be less adverse impact from ponding on WCA 2A than with Alternatives 2, 3, and 4.

Alternative 7 and 7R would be similar to Alternative 1 with regard to impacts to vegetation. Although there would be less ponding than with some of the other alternatives, vegetation could be adversely affected.

WCA 3A and WCA 3B

Alternative 2-Phase 2 (IOP 2) and Alternative 3-Phases 1 (IOP 2A) and 2 (IOP 2) would result in a very small increase in hydroperiod duration from the 300 to 330 day range to the 330 to 365 day range for one cell in WCA 3A and one cell in WCA 3B, relative to Alternative 2-Phase 1 (IOP 2B). These same operations would also increase average annual ponding depth classes from the 0.5 to 1.0 feet range to the 1.0 to 2.0 feet range in a few cells in the central and eastern portions of WCA 3A and over a large portion of the lower two-thirds of WCA 3B. Compared to 1995 Base conditions, Alternative 2-Phase 2 and Alternative 3-Phases 1 and 2 would produce similar conditions in WCA 3A and greater average ponding depths in 3B. Conversely, Alternative 2-Phase 1 would produce conditions similar to 95BaseMod in WCA 3B and slightly dryer conditions in northeastern WCA 3A. Alternative 4 would have an adverse impact on WCA 3A. Higher water levels caused by the early closure of the S-12 structures could impact vegetation on the southern portion of the WCA. For example, if the S-12 structures had been closed on November 1 in 1999, the water elevations would have been almost two feet higher than were realized. This could have had a detrimental effect on vegetation. ISOP 2000 (Alternative 1), ISOP 2001, Alternative 5, and Alternative 6 would provide hydrologic relief to NESRS and WSRS without the excessive ponding in WCA 3A of Alternative 4. S-12D would remain open and provide an important conduit for excess rainfall inundating WCA 3A during wet years without causing higher water elevations in the western sparrow habitat.

Currently, the two most significant causes of habitat degradation in WCA 3A are flood damage to tree islands in the northeastern and southwestern portions of 3A and the loss of peat soils, marshes, and tree islands in the northern portions of WCA 3A as a result of drought conditions and resulting wildfires. Although WCA 3B is drier than pre-drainage conditions, tree islands have remained largely unimpacted in this area. Alternatives 1, 2, 3, 5, and 6 would not have a significant effect on vegetation throughout the majority of WCA 3A, with the exception of slightly drier conditions in extreme northeastern 3A under Alternative 1 and Alternative 2-Phase 1. These drier conditions may provide some relief for tree islands that have experienced flood damage in this area. The increases in ponding depths in WCA 3B under Alternatives 1, 2, 3, 5, and 6 may provide some relief for over drained areas in southeastern 3B. Increases in ponding depths in the remainder of 3B under these same alternatives may have negative effects on some tree islands as a result of increased flooding. Alternative 4 would also increase ponding depths in WCA 3B, but to a greater degree than the other alternatives.

Alternative 7 and Alternative 7R would provide hydrologic relief to NESRS and WSRS without excessive ponding in WCA 3A. S-12D would remain open and provide an important conduit for excess rainfall inundating WCA 3A during wet years without causing higher water elevations in the western sparrow habitat. Currently, the two most significant causes of habitat degradation in WCA 3A are flood damage to tree islands in the northeastern and southwestern portions of 3A and the loss of peat soils, marshes, and tree islands in the northern portions of WCA 3A as a result of drought conditions and resulting wildfires. ISOP 2000, ISOP 2001, Alternative 7, and Alternative 7R would not have adverse effects on vegetation throughout WCA 3A.

Although WCA 3B is drier than pre-drainage conditions, tree islands have remained largely un-impacted in this area from flooding. ISOP 2000, ISOP 2001, Alternative 7, and Alternative 7R would not have adverse effects on vegetation throughout WCA 3B.

Eastern Marl Prairies and Taylor Slough

Although Alternative 2, Phase 1 (IOP 2A) removes a berm in front of L-31W for the purpose of encouraging sheet flow to the eastern marl prairies, the average annual hydroperiod distribution for Taylor Slough and the eastern marl prairies is similar to Alternative 1. Alternative 1 and Alternative 2-Phase 1 both produce a similar increase in hydroperiod duration in the eastern Rocky Glades, relative to 95BaseMod conditions. Alternative 3-Phase 1 (IOP 2B) would increase the annual hydroperiod distribution for cells in the northeastern Rocky Glades, relative to Alternative 1 and Alternative 2-Phase 1. Phase 2 (IOP 2) of Alternatives 2 and 3 and Alternative 4 would produce hydroperiod increases similar to Alternative 3-Phase 1 in the northeastern Rocky Glades, but would also increase hydroperiods closer to the central, eastern Rocky Glades. None of the alternatives produce measurable changes in the central and lower portions of Taylor Slough. The effects of the alternatives on ponding depths follow a similar pattern to the hydroperiod distribution effects. Increases in hydroperiods in the eastern Rocky Glades areas adjacent to the LEC urban areas should benefit vegetative communities that have suffered from over drainage in the past. Marl prairies in the northern Rocky Glades adjacent to the LEC urban areas have been negatively

affected by over drainage that resulted in invasion by woody shrubs and increases in fire frequency.

Alternatives 5 and 6 would impact vegetation in the eastern marl prairie and Taylor Slough similar to the other alternatives, but higher flows from S-332B should increase the beneficial hydrologic impacts to the region. However, increased phosphorus levels with overflows associated with Alternative 5 could have an adverse effect on the vegetative community. These impacts would be much lower with Alternative 6 due to the water quality attenuation with the additional 240 acre seepage reservoir.

Alternative 7 and Alternative 7R would impact vegetation in the eastern marl prairie and Taylor Slough similar to Alternative 1, but higher flows from S-332B should increase the beneficial hydrologic impacts to the region.

Florida Bay

Wet season flows dominate the average annual freshwater flow volumes for all of the alternatives and 95BaseMod conditions. There are no substantial differences between the alternatives in average annual or monthly freshwater flow volumes towards Florida Bay, and none of the alternatives would substantially increase or decrease freshwater flows towards Florida Bay relative to 95BaseMod conditions. Consequently, none of the alternatives are expected to produce substantial changes in the Florida Bay salinity regime or significant impacts to mangrove or seagrass communities.

4.8 Fish and Wildlife

All of the alternatives increase hydroperiod duration and ponding depths in NESRS and are expected to benefit aquatic organisms. Populations of marsh fishes are expected to increase with increased hydroperiod duration and an increase in available habitat. Longer maintenance of dry season refugia is expected to increase survival over the dry season. Wading bird populations are expected to benefit from enhancement and expansion of foraging habitat and increases in the aquatic prey base. Increased hydroperiods and the associated reduction in fire frequency are expected to benefit tree island nesting habitat. Similarly, alligators are expected to benefit from the expansion and enhancement of habitat and increases in the prey base. Increases in hydroperiods are also expected to increase alligator abundance, nesting efforts, and nesting success.

Currently, the Rocky Glades/Eastern Marl Prairies are among the most degraded aquatic habitat within the southern Everglades (USACE 1999a). All of the alternatives would provide some benefit for the northern Rocky Glades and northern Taylor Slough by increasing hydroperiod duration and ponding depths. None of the alternatives would produce measurable changes in the central and lower portions of Taylor Slough. In general, increases in hydroperiod duration and ponding depths are expected to benefit fish and wildlife habitat by restoring more natural hydroperiods and reducing woody plant invasion and fire frequency in the northern Rocky Glades. Expansion of aquatic habitat and longer maintenance of dry season solution hole refugia are expected to increase the aquatic prey base and improve

foraging habitat for wading birds. Increases in hydroperiods are also expected to increase alligator abundance, nesting efforts, and nesting success.

The occurrence of wading bird nests increased during ISOP implementation in 2000 to 39,480, an increase of 40 percent over the previous year (FWS 2001). Increase nesting in WCA 3, ENP, and Florida Bay were primarily responsible, although there was a substantial decrease of nesting in WCA 1.

In comparison to 1995 Base conditions, all of the alternatives would produce substantial increases in the frequency and depth of high water events in WCA 2A. Alternative 7R would provide benefit to the northern Rocky Glades and northern Taylor Slough (similar to the other alternatives) without substantially adversely affecting habitats located in WCA 2A or WCA 3B because of the continuous pumping of S-12D.

4.9 Protected Species

In accordance with the Fish and Wildlife Coordination Act (48 Stat. 401, as amended; 16 U.S.C. 1531 *et seq.*) and Section 7 of the Endangered Species Act of 1973, as amended (16 U.S.C. 1531 *et seq.*), the Department of the Interior has prepared a Planning Aid Letter and a Coordination Act Report for the IOP alternatives. A separate Coordination Act Report was prepared by the Florida Fish and Wildlife Conservation Commission under the Fish and Wildlife Coordination Act (48 Stat. 401, as amended; 16 U.S.C. 1531 *et seq.*).

On April 2, 2002, the Corps received a Final Amended Biological Opinion on the Interim Operational Plan (IOP) for Protection of the Cape Sable Seaside Sparrow from the FWS. It should be noted that only the recommended alternative, Alternative 7R, was addressed by the FWS in the document. In the amendment, the FWS concurs that the recommended plan, Alternative 7R, is not likely to adversely affect the CSSS, wood stork, or eastern indigo snake; and that it would not introduce any additional effects to these species that were not previously considered in the February 19, 1999 B.O.

CSSS

Reasonable and Prudent Alternatives

The FWS B.O. presents the FWS RPA to the Experimental Program that would avoid jeopardizing the CSSS. The FWS RPA recommends that the selected IOP produce the following hydrological conditions for protection of the CSSS: 1) A minimum of 60 consecutive days of water levels at or below 6.0 feet NGVD at NP 205 between March 1 and July 15; 2) Ensure that 30%, 45%, and 60% of required regulatory releases crossing the Tamiami Trail enter ENP east of L-67 extension in 2000, 2001, and 2002; respectively (or produce hydroperiods and water levels in the vicinity of CSSS subpopulations C, E, and F that meet or exceed those produced by the 30%, 45%, and 60% targets); and 3) Produce hydroperiods and water levels in the vicinity of CSSS subpopulations C, E, and F that equal or exceed conditions that would be produced by Test 7, Phase 2 operations. ISOP 2000, ISOP 2001, and Alternative 7 meet or exceed 60 consecutive days of water levels at or below 6.0

feet NGVD at NP 205 in 25 of the 31 years (81% of the years) comprising the simulation period, (Alternative 4, described in the February 2001 DEIS, is the only alternative which meets the recommendation 84%, or in 26 of the 31 years). All of the alternatives meet or exceed the 30%, 45%, and 60% targets and meet or exceed conditions that would be produced by Test 7, Phase 2 operations.

Subpopulation A - Cape Sable Seaside Sparrow

All of the project alternatives produce approximately the same number of consecutive days of water levels at or below 6.0 feet NGVD at NP 205 between March 1 and July 15. As stated above, all alternatives meet or exceed this target in 25 of the 31 years comprising the simulation period. In comparison, 95BaseMod conditions meet or exceed this target in 23 of the 31 years that were simulated. Each of the alternatives would result in a similar reduction of annual flooding duration in the CSSS subpopulation A western marl prairie habitat relative to 95BaseMod conditions. The alternatives should have a similar beneficial effect on the western sparrow habitat by producing shorter hydroperiods that would benefit short hydroperiod marl prairie vegetation in the vicinity of CSSS subpopulation A.

Subpopulation B - Cape Sable Seaside Sparrow

None of the alternatives produce changes in the average hydroperiods or ponding depths in the vicinity of CSSS subpopulation B compared to 1995 Base conditions. Consequently, none of the alternatives is expected to alter the status of CSSS subpopulation B.

Subpopulations C, E, and F - Cape Sable Seaside Sparrow

All of the alternatives meet or exceed the FWS RPA recommendation for production of the 30%, 45%, and 60% regulatory release conditions. All of the alternatives would produce larger increases in annual average ponding depths and hydroperiod duration in the vicinity of CSSS subpopulation E compared to 95BaseMod conditions. The alternatives are expected to provide the greatest beneficial effects for the eastern marl prairies by restoring longer, more natural hydrologic regimes to the area.

All of the alternatives meet or exceed the FWS RPA recommendation for implementation of Test 7, Phase 2 conditions in the vicinity of CSSS subpopulations C, E, and F; and all of the alternatives provide some benefit for CSSS subpopulations C, E, and F by increasing hydroperiods in the Rocky Glades. None of the alternatives produce measurable changes in the central and lower portions of Taylor Slough.

Subpopulation D - Cape Sable Seaside Sparrow

None of the alternatives produce changes in the average hydroperiods or ponding depths in the vicinity of CSSS subpopulation D compared to 1995 Base conditions. Consequently, none of the alternatives is expected to alter the status of CSSS subpopulation D.

Conclusion

Based on the best currently available scientific information, the FWS determined that Alternative 7R represents an additional RPA for water-management actions to avoid jeopardy to the Cape Sable seaside sparrow and would not destroy or adversely modify designated critical habitat. Specifically, Alternative 7R must be implemented in combination with all other RPA components contained in the February 19, 1999 B.O. with the exception of component #6, requiring the completion and operation of MWD by 2003. Since Alternative 7R only addresses the water management needs of the sparrow, all other RPA requirements contained in the February 19, 1999 B.O. will continue to apply.

Monitoring Efforts

The sparrow is present in six sub-populations in short hydroperiod freshwater wetlands of South Florida, primarily within the boundaries of ENP (Figure 16). ENP staff first undertook a comprehensive survey of the sparrow in 1981, and this was repeated in 1992 and each year subsequently in conjunction with a contract with Dr. Stuart Pimm of Duke University. The sparrow breeding season extends from March until the rainy season begins, usually in June. Successful breeding requires that breeding season water levels remain at or below ground level in the breeding habitat. It also depends on maintenance of a short hydroperiod vegetative community devoid of woody species.

One of the large sub-populations (sub-population A), thought to be critical to the existence of the sparrow, is located in western Shark River Slough immediately in the path of water discharges out of WCA 3A through the S-12 structures. Unusually intense and unseasonable rainy periods during both winters of 1992/93 and 1993/94 caused prolonged flooding in sub-population A, with the result that little or no breeding there was possible during the 1993 and 1994 sparrow breeding seasons. The flooding of the habitat by direct rainfall was increased by discharges of water through the S-12s needed to meet the water regulation schedule for WCA 3A. This is reflected in the dramatic reduction of sparrows detected in subsequent surveys in sub-population A. As a consequence, the FWS issued a B.O. in 1999 providing recommendations to the Corps on how water levels must be controlled in nesting habitat so that the existence of the sparrow would not be jeopardized. The Corps responded by developing changes in water management operations through two iterations of what was called the Interim Structural and Operational Plan (ISOP) in 2000 and 2001, culminating in IOP in 2002, which has been in effect ever since. The goals are to keep sub-populations (particularly sub-population A) dry during the breeding season and to also keep the habitat for the sub-populations B, C, D, E, and F from excessive drying in order to prevent unnatural fire frequencies.

It was recognized in the B.O. that there could be times when unseasonable rainfall events could overwhelm the ability of the water management system to provide the necessary dry conditions. A protocol was developed to allow the Corps to document that all stipulated water management operations had been carried out, but to no avail because of direct rainfall on the habitat. This has happened twice since 1999 (2003 and 2005). The population estimates developed for the various sub-populations by Dr. Pimm and ENP staff are shown

below. It should be noted that the estimates for a particular year have relevance for potential breeding and this would be reflected in the estimates during the following year.

Since implementation of IOP, the FWS recommendations for protection of the sparrow were met in 2004 and 2006. Direct rainfall on sub-pop A prevented meeting the requirements for 2003 and 2005. This contributes to the lack of recovery of sub-pop A. Another factor in lack of recovery is change in vegetative structure resulting from physical damage during the high water events of 1993 and 1994 and a shift in the vegetative community dominants away from the historic species. This phenomenon is being studied by Drs Michael Ross of FIT and James Snyder of USGS in a monitoring study funded by the Corps.

Cape Sable Seaside Nesting

<u>Year</u>	<u>A</u>	<u>B</u>	<u>C</u>	<u>D</u>	<u>E</u>	<u>F</u>
1981	2688	2352	432	400	672	112
1992	2608	3184	48	112	592	32
1993	432	2464	0	96	320	0
1994	80	2224	-	-	112	-
1995	240	2128	0	0	352	0
1996	384	1888	48	80	208	16
1997	272	2832	48	48	832	16
1998	192	1808	80	48	912	16
1999	400	2048	144	176	768	16
2000	448	1824	112	64	1040	0
2001	128	2128	96	32	848	32
2002	96	1904	112	0	576	16
2003	128	2368	96	0	592	32
2004	16	2784	128	0	640	16
2005	96	2272	80	48	576	32
2006	Data not yet available					

Snail Kite

Restoration of longer, more natural hydroperiods in Shark River Slough and peripheral wetlands is expected to improve snail kite habitat in the ENP by creating more favorable conditions for apple snails. Average annual flooding duration and ponding depths in WCA 2 are not significantly different for Alternatives 5 and 6; however, Alternatives 2, 3, and 4 produce substantial increases in the frequency and depth of high water events in WCA 2A compared to 95BaseMod conditions. Increases in flooding may result in the loss of some small trees and the conversion of some long hydroperiod marshes to unvegetated open water habitat. Consequently, Alternatives 2, 3, and 4 may have a negative impact on snail kite foraging and nesting habitat in WCA 2A. Average annual flooding duration and ponding depths in WCA 2 with ISOP 2000, ISOP 2001, and Alternative 7 and 7R are greatly improved when compared to 95BaseMod. Average annual flooding duration and ponding depths in WCA 3A are not significantly different for the alternatives. Consequently, none of the

alternatives is expected to significantly alter the status of snail kites or their habitat in WCA 3A.

In the February 19, 1999 BO, the FWS concluded that the snail kite would be adversely affected by the C&SF Project operations, at that time known as Test 7, Phase I, of the Experimental Program of Water Deliveries to Everglades National Park. No incidental take of snail kites was anticipated; however, the incidental take analysis was developed based on the premise that the original RPA would be implemented. The original RPA would have eliminated detrimentally deep water levels and long hydroperiods in southern and eastern WCA 3A, as water was shifted from WCA 3A in order to meet the RPA targets for water releases east of the L-67 Extension. The recommended alternative, Alternative 7R, was proposed as the biological equivalent for providing the same protection to the Cape Sable seaside sparrow as would the water management provisions of the original RPA. Alternative 7R would not provide the same relief in terms of hydrologic improvements to the southern and eastern portions of WCA 3A as would the original RPA.

The Corps agreed to implement a “Construction Monitoring Plan” for C-111 and MWD features operating with Alternative 7R for snail kites that would avoid disturbance to nesting snail kites, and construction activities will only occur within, or nearly within, existing structure footprints. Thus, according to the FWS, activities associated with C-111 and MWD features operations are not likely to adversely affect the snail kite. The FWS concurs, however, that operational implementation of Alternative 7R could adversely affect snail kites and designated snail kite critical habitat in WCA 3A but would not likely jeopardize the species.

As stated in the Final Amended B.O., the FWS anticipates that Alternative 7R would result in incidental take in the form of “harm” resulting from significant habitat modification or degradation that results in death or injury to individual snail kites by impairing essential breeding and foraging patterns measured by the frequency and duration of high-water events. The two indicator regions where snail kites have been documented and which experience excessively high water levels are Indicator Regions 14 and 19. Thus, if actual operations of Alternative 7R produce higher water levels than those predicted to occur via the SFWMM in Indicator Regions 14 (Southern WCA 3A) and 19 (Eastern WCA 3A), as measured by a gauge or gauges mutually agreed upon by the FWS and the Corps as compared to a five-year rolling average of the model output for those indicator regions, then the Corps would have exceeded the incidental take authorized by this amendment. This incidental take is anticipated to occur annually until implementation of CSOP. The CSOP is scheduled for full structural and operational implementation no later than 2007. This level of incidental take is to be considered an addition to the incidental take authorized by the February 19, 1999 BO, as amended. Full details regarding the terms and conditions for the incidental take are included in the Final Amended B.O.

Monitoring Efforts

The Corps has funded a program to monitor nesting effort and success of the Everglade Kite in the Water Conservation Areas (WCA) since 1995 with Dr. Wiley Kitchens, of USGS and

the University of Florida. The objectives are to track the numbers and success of kite nesting activities in WCA 3A as part of an on-going demographic study of the kite over its range and to try to understand the environmental variables related to successful breeding. The Corps is also funding Dr. Kitchens to monitor vegetation responses to altered hydrologic regimes in WCA-3A in areas of traditional kite nesting and foraging habitat, in accordance with recommendations in the 2002 B.O. on IOP.

The snail kite population in Florida progressively and dramatically decreased between 1999 and 2002 from approximately 3400 to 1700 birds in response to the moderately severe regional drought of 2000/2001. Survival of both juveniles and adults rebounded shortly after the drought, but the number of young produced has not recovered from a sharp decrease that preceded the drought. Population size estimates of abundance between 2002 and 2003 suggest a possible stabilization at approximately 1500-1600 birds. Although the population size estimates of 1700 for 2004 and 2005 are slightly higher than both 2002 and 2003, this is not thought to be statistically significant. Nesting activity is summarized below for the three full years since implementation of IOP.

		<u>Active Nests</u>	<u>Successful Nests</u>	<u>Young Fledged</u>
2003	WCA 3A	82	28	37
	WCA 3B	2	0	0
	ENP			
	Elsewhere*	65	19	29
2004	WCA 3A	48	19	25
	WCA 3B	6	3	4
	ENP			
	Elsewhere*	51	21	36
2005	WCA 3A	12	0	0
	WCA 3B	0		
	ENP	0		
	Elsewhere*	107	23	39

* WPB, Lake Kiss., Lake E Toho., Lake O, St Johns Marsh, Lake Toho., Lake Istopoga, WCA 2A, WCA 2B, WCA 1, BCNP.

In 2005, nesting success was lower than during any other year between 1992 and 2005. Historically, nests in WCA 3A have fledged, proportionally, the large majority of young in the region. No young were fledged out of WCA 3A in 2005. Dr. Kitchen's believes that this trend of lowered regional reproduction is a cause of concern regarding the sustainability of the population.

The persistence of the snail kite in Florida is thought to depend principally on the large wetlands present in the WCAs. Current water regulation schedules shorten the window of

time during which kites can breed. In addition to the negative effect on reproduction, the rapid water level recession rates from the elevated stage schedule between February and July, intended to mitigate the extended hydroperiods and excessive depths between September and December, presents extreme foraging difficulties to both juvenile and adult kites.

WCA-3A is the largest and most consistently utilized (as measured by numbers of birds observed during annual surveys from 1970 to 1994) of the designated Critical Habitat for the kites. Snail kites have increasingly moved their nesting activity to areas of higher elevations in WCA-3A over the past two decades, presumably as the traditional nesting vegetation has been degraded by sustained high water levels due to water management practices. Higher water levels have resulted in the conversion of wet prairies (preferred foraging habitat for kites) to aquatic sloughs in selected sites in that area, along with losses of interspersed herbaceous and woody species essential for nesting habitat. Hydrological modeling of IOP-Alt.7R in 2002 indicated that implementing the project could result in excessive ponding and extended hydroperiods of the type that could further degrade nesting and foraging habitat. While the impacts of IOP-Alt.7R might adversely impact a significant portion of the Critical Habitat, the U.S. Fish and Wildlife Service determined in 2002 that it is not likely to result in jeopardy to the snail kite and recommended a number of reasonable and prudent measures to minimize impacts of incidental take of snail Kites. Among the terms of this document are requirements for: 1) tracking the yearly status of the snail kite and any vegetative shifts that may occur within snail kite habitats, and 2) determining the number of snail kites initiating nesting in the action area and the success rate of those nesting efforts each year. The Florida Cooperative Fish and Wildlife Research Unit is currently under contract by the Corps to satisfy the monitoring requirements. The vegetative monitoring part of this work expires in 2006, but is expected to be extended. Specifically, it addresses the concern that IOP-Alt.7R could adversely affect the structure and function of vegetation communities in WCA-3A, portions of which are designated Critical Habitat of the snail kite. The principal concern is that the habitat quality, and thus the carrying capacity, of WCA 3A is already seriously degraded. Although still preliminary, the studies tend to confirm these concerns. Since 2002, kite production in WCA 3A has dramatically dropped, having produced no kites in 2005. This coincides with successive annual shifts (2002, 2003, 2004, and 2005) in community types within the slough/prairies at sites reported in 2002 to be prime areas of snail abundance, and thus kite foraging, in WCA 3A. The conversion trend from emergent prairies/sloughs to deep water sloughs is certainly degradation in habitat quality for the kites. Habitat quality in WCA 3A is changing progressively and dramatically to less desirable habitat in this critical area, and this conversion is rapid, with changes evident even after a year. Continuation of the monitoring protocol would allow these changes to be tracked for indications of rebound or continued degradation, as well as to be able to sort out the effects of hurricanes from those that might be due to IOP.

Wood Stork

The quality of foraging habitat in NESRS and the Rocky Glades is expected to improve as a result of increases in annual hydroperiod distribution with all Alternatives. Longer hydroperiods are expected to improve foraging habitat by expanding the available habitat for aquatic prey base species and prolonging the availability of dry season refugia for prey

species. All of the alternatives are expected to provide the benefit for NESRS and Rocky Glades habitats by providing increases in ponding depths and hydroperiod distributions. None of the alternatives are expected to improve the reduced freshwater flows to the traditional mangrove nesting and foraging habitats of Florida Bay. Consequently, all alternatives may continue conditions that are likely to delay colony formation and decrease the probability of a successful nesting season in Florida Bay.

According to the FWS in the Final Amended B.O., Alternative 7R is not likely to produce water levels as low as the original RPA for wood stork habitat in southern and eastern WCA 3A; however, wood storks have been documented as successfully nesting and raising young under conditions that have been produced under ISOP. Based on the best currently available scientific information, the FWS concluded that Alternative 7R is consistent with implementation of the water management provisions of the existing RPA.

The FWS anticipates that Alternative 7R is not likely to cause additional effects to the wood stork beyond those analyzed in its February 19, 1999 BO. Accordingly, the February 19, 1999 B.O. and incidental take statement will continue to provide the FWS' recommendations for compliance with the Endangered Species Act, and the wood stork will not be considered further.

Monitoring Efforts

The Corps has funded a program to monitor nesting effort and success of wading birds, including wood storks, in the Water Conservation Areas (WCA) with Dr. Peter Frederick of the University of Florida since 1986. The objectives are to track the demographics of the various species and to try to understand the environmental variables related to successful breeding. The program includes aerial surveys to identify locations of wading bird nesting colonies each year as they develop and to estimate the number of nests produced by each wading bird species. Ground surveys by airboat are conducted in colonies that contain wood storks to estimate nesting success (young fledged) in a sub-set of marked nests. Nesting effort (# nests) of wood storks from 2001 to 2005 in the various named colonies in the WCAs and just south of WCA 3B in ENP is summarized below.

<u>Colony Name</u>	<u>2001</u>	<u>2002</u>	<u>2003</u>	<u>2004</u>	<u>2005</u>
Tamiami West (NESRS)	1400*	350-400*	350-400*	50	200*
2B Melaleuca (WCA 2A)	50				
Crossover (WCA 3A)	400	76*	40	150*	0
Jetport (WCA 3A)		550*	375	0	0
Mud East (WCA 3A)				100-130	20
Jetport South (WCA 3A)				29	
WCA 1	16		0		24

* Some nests successfully fledged young

In 2001, overall wood stork nesting effort in the WCAs was greater than had previously been seen since the mid-1970s and 10% greater than 2000, another banner year. As in 2000, the storks nested in February and were able to fledge large numbers of young prior to the onset of rains. Overall stork nesting in the Everglades during 2001 was 3.4 times the 10-year running average, 2.9 times the five-year average, and over 10 times the average from the late 1980s. Wood stork nesting success was best at the Tamiami West colony, where about 900 young were estimated to have survived. The Crossover colony was completely abandoned probably as a result of a strong drying trend in WCA 3A.

In 2002, wood storks had generally high nest success at all colonies. The number of storks nesting within the WCAs were 2.9 times the average of the previous five years and 3.7 times the average of the previous 10 years. Many large groups of juvenile storks were seen throughout early summer foraging in the WCAs, Big Cypress National Preserve, and the Everglades Agricultural Areas.

In 2003, nesting effort in the WCAs was 2.1 times the average of the previous 5 years and 3.9 times the previous 10 years, but large numbers of these nests were abandoned. These failures can be attributed in large part to heavy rainfall, particularly in late March. The nest success rate at Tamiami West was 31% lower than in 2002, generally occurring early in the nesting season, during March.

In 2004, wood storks initiated nesting somewhat late even by the standards of the past 20 years and these birds began abandoning nests in response to heavy rainfall in early March. However, there was no evidence of abandonment at the Crossover colony, and the birds there appeared to have fledged substantial numbers of young.

In 2005, nests were largely unsuccessful as a result of stable or rising during March due to unseasonable rainfall. Tamiami West had a maximum of 25-35 successful nests.

In summary, wood stork nesting success during the three full years of IOP implementation was mixed, with meteorological events overcoming any hydrological effects of water management operations.

Florida Panther

The Florida panther occurs primarily in upland habitats. Hydrologic effects of the alternatives are expected to be limited to existing or historic wetlands and are not expected to have significant effects on the upland habitats preferred by these species. However, a component of Alternatives 6, 7, and 7R involves construction of a 240-acre seepage reservoir consisting of former agricultural lands lying immediately northeast of the existing West Water Detention Area (Figure 4). The site extends north from the vicinity of the S-332B discharge pipes to Hamlin Mill Road, and the eastern and southern boundaries are fenced with 3-strand barbed wire fencing. The land is largely in the early stages of old field succession with a margin of tall, dense grasses and woody shrubs. Other than old truck-farm fields, the area includes two mango groves. An approximately 26-acre fenced grove in the east central portion of the area

is relatively well manicured, with no ground or shrub layer and orderly rows of mature mango trees forming a closed canopy. An approximately 60-acre site in the northwest corner consists of smaller mango trees, more open canopy, and an overgrown, weedy shrub layer.

Fresh panther tracks were identified in November 2000 along a farm dirt roadway in the northeast corner of the proposed site. The panther database revealed two records of panther located in the project area: both were of panther #16, which was originally collared in 1986, and died in early 2000. The habitats of possible panther utilization are the two mango grove areas, which could serve primarily as movement corridors. The area in question is on the fringe of the panther habitat, and construction of the seepage reservoir would not likely significantly affect the panthers (S. Bass, personal communication with J. Moulding). However, any loss of panther habitat should be carefully considered and would be considered significant.

The FWS concurred in the amended B.O. that although some loss of panther habitat would occur with construction of the reservoir, panther habitat in adjacent areas within the ENP should realize an overall ecological improvement. The FWS determined that implementation of Alternative 7R is not likely to adversely affect the Florida panther.

Eastern Indigo Snake

The eastern indigo snake occurs primarily in upland habitats. Hydrologic effects of the alternatives are expected to be limited to existing or historic wetlands and are not expected to have significant effects on the upland habitats preferred by this species. Consequently, no adverse effects to the eastern indigo snake are expected as a result of any of the alternatives. The FWS concurred that the recommended alternative, Alternative 7R, is not likely to adversely affect the eastern indigo snake.

4.10 Air Quality

There have been no impacts to air quality with the implementation of Alternative 7R.

4.11 Noise

There has been no significant impact to noise levels with the implementation of Alternative 7R. The ambient noise levels with the system operations have been minor.

4.12 Aesthetics

There has been no significant impact to aesthetics with implementation of Alternative 7R.

4.13 Recreation

There has been no impact to recreation with the implementation of Alternative 7R.

4.14 Land Use

There has been no significant impact to land use with implementation of Alternative 7R.

4.15 Socioeconomics

There has been no adverse socioeconomic impact with the implementation of Alternative 7R.

4.16 Agriculture

There has been no adverse impact to agriculture with the implementation of Alternative 7R. As presented previously in this document (see Section 4.5, Flood Control), the actual flood control capability within IOP is consistent with the previous modeling results. The observed high stages in the L-31N canal system are maintained at levels similar to or slightly below the high stages predicted by IOP modeling.

4.17 Hazardous, Toxic, and Radioactive Materials

Implementation of Alternative 7R had no impact on hazardous, toxic, or radioactive materials because no such materials were identified in the project construction footprint prior to onset of construction.

4.18 Cultural Resources

There were no impacts to cultural resources from implementing Alternative 7R.

4.19 Cumulative Impacts

Cumulative impacts were previously described in the 2002 FEIS.

4.20 Incomplete or Unavailable Information

The analysis provided in Section 4.0, Environmental Consequences, of this document are based on current knowledge of physical and biological conditions in the project area, and on projections of most probable future conditions as indicated by hydrologic models. It is recognized that new technical information may be developed as the selected plan is implemented and that observed results may differ from predicted results. Considering this, it

may be necessary to adjust operations to address the new information or observed results to achieve better performance for environmental restoration and protection to ensure the health, safety, and well being of the general public and affected individuals.

4.21 Unavoidable Adverse Impacts

Unavoidable adverse impacts could occur with Alternative 7R. Under extraordinary and uncommon conditions, impacts to water quality below pump station S-332B might occur with overflow, but overflow impacts to water quality have been minor during the period between 2002 and 2006. In addition, impacts to water quality would be eliminated upon completion of the S-332B north seepage reservoir and partial S-332B/S-332B connector under Alternative 7R. The detention of excess water in the WCAs could also occur with Alternative 7R, and would likely continue in the future without full implementation of the MWD project. The impacts of this detention could include loss of tree island vegetation and associated wildlife, adverse impacts to snail kite nesting and critical habitat, and adverse impacts to wood storks.

4.22 The Relationship Between Local Short-Term Uses of Man's Environment and Maintenance of Long-Term Productivity

The proposed operations were developed in response to the February 1999 FWS Biological Opinion for the MWD project, Experimental Program, and C-111 Project. The proposed IOP is designed to avoid jeopardizing the CSSS, a federally endangered species occurring within the ENP, during the interim period leading up to completion of the MWD project. The short-term uses of the environment with this project are greatly justified by the potential long-term benefit to this species.

4.23 Irreversible and Irretrievable Commitments of Resources

The proposed operations would be in effect only until the full MWD Project is completed and is not expected to be in place beyond 2010. The commitment of resources would be temporary in nature with this project, and the irreversible and irretrievable commitment of resources would be minimal. Loss of marginal Florida panther habitat would occur with implementation of Alternative 7R due to construction of the S-332B seepage reservoir.

4.24 Energy Requirements and Conservation Potential

Energy use of the recommended plan would be minimal and energy requirements for implementing any of the project alternatives would be similar. Conservation potential for any of the alternatives would be minimal.

4.25 Environmental Commitments

The Corps will continue to operate the water control structures as authorized and approved. The Corps will continue to consult with the FWS, ENP, SFWMD, FFWCC, and other federal,

state, local, tribal, and private interests to improve and modify the operations as circumstances dictate. The Corps will incorporate any commitments required by the appropriate regulatory agencies identified during the NEPA and ESA processes. The Corps will re-evaluate the operational parameters of the selected alternative as information becomes available and will coordinate with the interested parties previously mentioned with any modifications.

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5.0 COMPLIANCE WITH FEDERAL STATUTES, EXECUTIVE ORDERS, AND POLICIES

5.1 Archeological and Historic Preservation Act and National Historic Preservation Act.

Archival research and consultation with the State Historic Preservation Officer (SHPO) have been completed in accordance with the National Historic Preservation Act, as amended; the Archeological and Historic Preservation Act, as amended and Executive Order 11593. The project would not affect historic properties included in or eligible for inclusion in the National Register of Historic Places. The project is in compliance with each of these Federal laws. The project and USACE determination of no effect has also been coordinated with the Miami-Dade County Historic Preservation Officer.

5.2 Clean Air Act.

The affected air-shed is not a non-compliance area. No air quality permits would be required. This SDEIS will be coordinated with concerned agencies, including the U.S. Environmental Protection Agency (EPA), other stakeholder agencies and the public, and would then be in full compliance with Section 309 of the Act.

5.3 Clean Water Act.

Actions under the recommended IOP plan, as well as the ISOP operations discussed in this DSEIS, did not and would not result in the release of contaminants into the aquatic environment. . This law also regulates wetlands protection. The net result of proposed operations under the recommended alternative is an improvement in hydropatterns in NESRS due to improved water deliveries and partially degrading L-67 Extension Levee, while excessively high water stages near the western CSSS populations would continue to be avoided. A 404(b)1 evaluation of wetlands impacts due to filling in the L-67 Extension Canal was included in the 1992 EIS on Modified Water Deliveries to Everglades National Park (Mod Waters, USACE 1992). Construction of the S-332 seepage reservoirs was included in the May 1994 EIS on the C-111 General Reevaluation Report (USACE 1994) and the January 2002 Environmental Assessment on the C-111 GRR Supplement (USACE 2002). Therefore, no 404(b)1 analysis is required for this action.

5.4 Endangered Species Act.

On April 2, 2002, the Corps received an amendment to the February 19, 1999 Biological Opinion which states that IOP Alternative 7R is not likely to adversely affect the CSSS, wood stork, or eastern indigo snake, and that it would not introduce any additional effects to these species that were not previously considered in the 1999 B.O (Appendix B). Although there

would be some loss of Florida panther habitat due to construction of the S-332B seepage reservoir, the ENP would realize an overall ecological improvement. Therefore, the FWS determined that IOP Alternative 7R is not likely to adversely affect the Florida panther.

The FWS states that although Alternative 7R would adversely affect the snail kite and designated snail kite habitat, it is not likely to jeopardize the continued existence of the species or result in the destruction or adverse modification of the designated critical habitat. The terms and conditions of the incidental take are included in the Final Amended BO.

The Corps has remained in close coordination with the FWS on the species subject to consultation since 2002. Monitoring is underway as required under the Amended Biological Opinion of April 2002. The Corps has not identified any adverse effects on species or their critical habitats resulting from water management operations during the period between August 2, 2002, when operations under IOP began, and the present. (Refer to species discussions under Environmental Effects for specific information).

5.5 Federal Water Project Recreation Act; Land and Water Conservation Fund Act.

No public recreational facilities would be impacted under any alternative considered in this document. Both ISOP and IOP operations are specified as complying with this law.

5.6 Fish and Wildlife Coordination Act.

Reports were prepared by the Department of the Interior (U.S. Fish and Wildlife Service, National Park Service, Everglades National Park) and the Florida Fish and Wildlife Conservation Commission (FFWCC) in compliance with this law. The DOI Coordination Act Report (CAR) and its Addendum, provided to the Corps on August 2, 2001, are included in this Final EIS as Appendix C. The CAR discusses ISOP operations as well as the alternatives proposed in the Final EIS for the IOP. The CAR provides analyses that support the opinion of these Department of the Interior agencies that ISOP operations may not have fully met 2000 and 2001 RPA targets, and that overflow of the S-332B weir under ISOP and some IOP alternatives may have led or lead to introduction of unacceptably high levels of nutrients into the Park, or lead to changes in dominant vegetation. A Supplement to the CAR was provided on September 28, 2001. This Supplement, which discusses the previous preferred alternative (Alternative 7), is reproduced in the same appendix as the CAR. Additionally, the Corps has provided a different analysis of these issues in the text of this SDEIS, based on its understanding of water quality sampling and analysis, and of model limitations and results. Further considerations are provided as a second appendix following on the FWS CAR and Supplement to the CAR. In addition to stating that Alternative 7 would “likely meet ESA requirements for the CSSS,” the Addendum further states that the recommended alternative “should maintain or improve habitat suitability as compared to the ISOP or Draft IOP EIS alternatives.”

5.7 Farmland Protection Policy Act.

This DSEIS addresses operational changes of an existing system of levees, canals and structures. Only the new detention area has the potential to affect farmland. The lands recommended for construction of the additional detention areas at S-332B, S-332C and S-332D were previously classified as Statewide Unique farmlands (rock-plowed lands with a 12-month growing season). However, they were acquired by the South Florida Water Management District as authorized under the C-111 Project (USACE, 1994), and are part of the “C-111 buffer area.” While the SFWMD continues to lease some of this land for farming, its ultimate fate (removal from agricultural use) has already been determined. No further adverse effects to farmlands would occur as a result of building additional detention areas now as recommended in Alternative 7R of this operational plan. Therefore, re-coordination with the Natural Resources Conservation Service is not necessary. The recommended alternative is in compliance.

5.8 National Environmental Policy Act.

A Draft EIS (DEIS) for the Interim Operational Plan was coordinated with the public and agencies beginning on February 23, 2001, and a SDEIS circulated for a period of 45 days, beginning with the publication of the Notice of Availability in the Federal Register and ending on November 26, 2001. A Final EIS was prepared and coordinated in full compliance with NEPA, and a Record of Decision (ROD) was signed in July 2002.

Due to the recent ruling in the United States District Court, Southern District of Florida, the Corps has been ordered to prepare a Supplemental EIS and include modeling results for the recommended plan that were not available at the time the FEIS was published and the ROD was signed. This DSEIS has been prepared to satisfy the requirements of the order. Once agency and public coordination is complete, a Final SEIS will be prepared, and the project will be in full compliance with NEPA.

5.9 Coastal Zone Management Act.

The DSEIS will be coordinated with the Florida Department of Community Affairs, the State clearinghouse for Coastal Zone Management Plan consistency review. The State of Florida undertakes consistency review of both Draft and Final Environmental Impact Statements. Previous coordination led to a determination by the Clearinghouse that the plan was consistent at that time.

5.10 Resource Conservation and Recovery Act and Toxic Substances Management Act.

No items regulated under these laws or other laws related to hazardous, toxic or radioactive waste substances have been discovered. None are considered likely to exist in the project area, including the proposed seepage reservoirs.

5.11 E.O. 11988. Floodplain Management.

This Order directs Federal agencies to avoid siting projects in floodplains and to avoid inducing further development of flood-prone areas. All considered alternatives, including the no-action alternatives and recommended alternatives in the ISOP and the IOP, are in compliance with this Executive Order. The proposed operational changes continue to reduce hazards and risks associated with floods, minimize the impact of floods on human safety, health and welfare, and restore and preserve the natural and beneficial uses of the base flood plain.

5.12 E.O. 11990. Protection of Wetlands.

This Order directs Federal agencies to avoid developing or siting projects in wetlands. The recommended alternative is in full compliance. Recommended alternative operations would reduce seepage of ground water away from wetlands along the Eastern Everglades boundary and partially re-hydrate wetlands in CSSS populations E and F during the rainy season, while providing for adequate water level controls for western CSSS populations during the nesting season. Additionally, the southernmost 4 miles of the L-67 levee extension would be degraded, returning the levee footprint to wetlands.

5.13 E.O. 12898. Environmental Justice.

This Order directs Federal agencies to provide for full participation of minorities and low-income populations in the Federal decision-making process, and further directs agencies to fully disclose any adverse effects of plans and proposals on minority and low income populations. The ISOPs and proposed IOP are in full compliance. The operations of the structures discussed herein, in addition to providing acceptable protection to populations of the CSSS, would benefit all population groups of southern Miami-Dade County by providing flood reduction, drinking water supply protection, and restoration of the wetlands and other natural resources inside and outside Everglades National Park.

6.0 PUBLIC INVOLVEMENT

The various agencies, affected stakeholders, and interested members of the community were allowed opportunities to provide input during the NEPA process. A number of public and plan development workshops were held to elicit input from interested parties. Table 6.1 provides a list of announcements, interagency coordination, and public workshops conducted throughout this process. A summary of the scoping process was included in Section 1.5.

Table 6.1 Public Involvement Summary

Action	Location	Date
NOI published in Federal Register	NA	13 August 1999 (Volume 64, Number 156)
Scoping Letter Mailed	NA	26 October 1999
Scoping Meeting	Homestead, FL	16 November 1999
1 st Round of Modeling Posted on the Corps Website	NA	24 March 2000
Interagency Meeting	Ft. Lauderdale, FL	10 April 2000
Public Workshop	Homestead, FL	25 April 2000
2 nd Round of Modeling Posted on the Corps Website	NA	28 April 2000
Interagency Meeting	Ft. Lauderdale, FL	15 May 2000
3 rd Round of Modeling Posted on the Corps Website	NA	31 May 2000
Public Workshop	Homestead, FL	7 June 2000
Public Workshop	Homestead, FL	30 January 2001
Public Workshop	Homestead, FL	20 June 2001
Presentation to the Governing Board of the SFWMD	West Palm Beach, FL	12 July 2001
Public Workshop	Miami, FL	16 July 2001
Stakeholder Outreach	Homestead, FL	20 July 2001
Stakeholder Outreach	Jacksonville, FL	13 August 2001
Stakeholder Outreach	Ft. Lauderdale, FL	22 August 2001
Public Workshop	Homestead, FL	29 October 2001
NOI published in Federal Register	NA	5 May 2006
Scoping Letter Mailed	NA	10 May 2006

7.0 DISTRIBUTION

A list of agencies, organizations, and private individuals that will be sent a copy of the Draft SEIS is attached.

8.0 LIST OF PREPARERS

Table 8.1 List of Preparers

Name	Affiliation	Role
Dr. Jon Moulding, PhD.	USACE	Document Review
Ms. Barbara Cintron	USACE	Document Management and Review
Mr. Daniel Crawford	USACE	Hydrologic Modeling
Dr. Richard Punnett, PhD.	USACE Contractor	Hydrologic Modeling
Ms. Kimberley Taplin	USACE	History of Project, Marsh Operations, Collaborative Process
Mr. Trent Ferguson	USACE	Engineering Design
Mr. James Riley	USACE	Water Quality Review
Mr. Martin Gonzalez	USACE	C-111 Project History
Ms. Brooks Moore	USACE	Document Review
Mr. P. (Brice) McKoy	USACE	MWD Project Review
Mr. Lee Swain	Dial Cordy and Associates	Impact Analysis, Document Preparation

9.0 CONCLUSIONS

The consensus Recommended Alternative would meet or exceed the 30%, 45%, and 60% targets and meet or exceed conditions that would be produced by Test 7, Phase II operations. The recommendations provided by the FWS' Final Coordination Act Report (CAR) (FWS 2001) were incorporated into the recommended alternative design. S-334 would be the primary route for WCA 3A regulatory flows, the S-332B retention area would be constructed and overflow would only be allowed under limited circumstances described in the Pre-storm/Storm/Storm Recovery Operations. A trigger was included to prevent further S-332B operations if the adjacent CSSS habitat experiences hydroperiods greater than 180 days, and lower canal stages and increased pumping would only be implemented when WCA 3A regulatory releases are through the SDCS except under circumstances described in the Pre-storm/Storm/Storm Recovery Operations. In addition, improved SFWMM and MODBRANCH hydrologic models would be used for future modeling efforts, and the Corps would use a more collaborative approach to reach consensus with other agencies on future projects. On this basis, the FWS concurs that Alternative 7R, the recommended alternative, is acceptable.

10.0 REFERENCES

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APPENDICES

APPENDIX A

SCOPING DOCUMENTS

be obtained from the Privacy Act Officer, Headquarters, Defense Logistics Agency, ATTN: DP, 8725 John J. Kingman Road, Stop 2533, Fort Belvoir, VA 22060-6221.

RECORD SOURCE CATEGORIES:

Data is supplied by participants, supervisors, and information technology offices.

EXEMPTIONS CLAIMED FOR THE SYSTEM:

None.

[FR Doc. 06-4250 Filed 5-4-06; 8:45 am]

BILLING CODE 5001-06-M

DEPARTMENT OF DEFENSE**Department of the Army, Corps of Engineers****Notice of Availability of Draft Environmental Impact Statement for the Floyd County, KY (Levisa Fork Basin), Section 202 Project**

AGENCY: Department of the Army, U.S. Army Corps of Engineers, DoD.

ACTION: Notice of availability.

SUMMARY: Pursuant to the National Environmental Policy Act (NEPA), the U.S. Army Corps of Engineers, DoD, Huntington District has prepared a Draft Environmental Impact Statement (DEIS) which documents planning analyses undertaken for a proposed flood damage reduction projects in the Levisa Fork basin in Floyd County, KY. The study area includes the incorporation areas of Prestonsburg and unincorporated areas in Floyd County which are subject to flood damage from the potential of a reoccurrence of the April 1977 flood. The study area does not include the City of Martin, KY where a separate flood damage reduction project is underway. The DEIS documents agency evaluation of four alternatives, two of which includes floodwall/levee alignments intended to protect Prestonsburg and non-structure flood-proofing measures, a total non-structural alternative, and the No Federal Action alternative.

DATES: Written comments on the Draft Environmental Impact Statement will be accepted for 45 days following publication of the Environmental Protection Agency's Notice of Availability for this Draft Environmental Impact Statement (DEIS) in the **Federal Register**.

ADDRESSES: Address all written comments on the DEIS to Stephen O'Leary PM-PD-S, U.S. Army Corps of Engineers, Huntington District, 502 Eighth Street, Huntington, WV 25701-2070. Electronic mail: Stephen.D.Oleary@Lrh01.usace.army.mil.

FOR FURTHER INFORMATION CONTACT: Stephen O'Leary, Telephone (304) 399-5841.

SUPPLEMENTARY INFORMATION: The Energy and Water Development Appropriations Act of 1981 (Pub. L. 96-367) provided \$25,150,000 for the development of flood protection measures for the Levisa and Tug Forks of the Big Sandy River and Upper Cumberland River. Many Floyd County communities within the floodplain of the Levisa Fork and Russell Fork and tributaries were devastated by the April 1977 flood, which was the flood of record for much of the region. Congressional reaction to these flood events resulted in the inclusion of funds and language in various legislative directives that mandated expeditious implementation of flood damage reduction measures within the study area covered by the Huntington District's Section 202 General Plan.

The study area, primarily residential in nature, includes the incorporated areas of Prestonsburg and unincorporated areas in the county subject to flood damage from the potential of a reoccurrence of the April 1977 flood. The proposed project would require providing flood protection measures to approximately 2,000 structures, 75 percent of which are residential.

Four alternatives are evaluated in detail the DEIS, including the No Federal Action. One alternative is totally nonstructural flood-proofing measures. Two alternatives include floodwalls/levees along with nonstructural measures, and are generally described as follows. (1) Floodwall/levees to provide flood damage reduction for infrastructure, roadways, homes, and businesses in most of Prestonsburg through a combination of the floodwall, gates, raised roadways, curbs, and small wall sections in the down town area. Floodwalls would prevent Levisa Fork overtopping in the Blackbottom area, which now causes flooding in the central business district as well as in Blackbottom. In this alternative the floodwall would also extend to protect the Big Sandy Community and Technical College (BSCTC) and its campus. (2) The proposed structural component would provide flood damage reduction for infrastructure, roadways, homes, and businesses in most of Prestonsburg through a combination of the floodwall, gates, raised roadways, curbs, and small wall sections in the downtown area. This plan's floodwall would prevent Levisa Fork overtopping in the Blackbottom area, which now

causes flooding in the central business district as well as in Blackbottom. Flood insurance costs would be reduced for structures protected by the floodwall. The floodwall would not protect the BSCTC and its campus. BSCTC would be able to participate in the nonstructural program for eligible structures.

The Corps invites full public participation to promote open communication and better decision-making. All persons and organizations that have an interest in the Levisa Fork Basin flooding problems as they affect Floyd County and the environment are urged to participate in this NEPA process.

A public hearing on the content of the DEIS will be held at Prestonsburg High School, 825 Blackcat Boulevard, Prestonsburg, KY 41649. The public hearing and all other future public involvement activities will be announced in advance through notices, media news releases, and/or mailings.

Copies of the DEIS may be reviewed at the following locations:

1. U.S. Army Corps of Engineers, Huntington District, 502 Eighth Street, Huntington, WV 25701-2070, Room 3100.
2. Floyd County Public Library, 18 North Arnold Avenue, Prestonsburg, KY 41653-1269.
3. Prestonsburg Community College Library, One Bert T. Combs Drive, Prestonsburg, KY 41653.
4. <http://www.lrh.usace.army.mil/projects/review>.

Brenda S. Bowen,

Army Federal Register Liaison Officer.

[FR Doc. 06-4235 Filed 5-4-06; 8:45 am]

BILLING CODE 3710-GM-M

DEPARTMENT OF DEFENSE**Department of the Army, Corps of Engineers****Intent To Prepare a Supplemental Environmental Impact Statement to the Interim Operational Plan for Protection of the Cape Sable Seaside Sparrow, Everglades National Park, Miami-Dade County, FL, May 2002**

AGENCY: Department of the Army, U.S. Army Corps of Engineers, DOD.

ACTION: Notice of intent.

SUMMARY: In 1999, the U.S. Fish and Wildlife Service issued a Final Biological Opinion for the Modified Water Deliveries to Everglades National Park Project (MWD Project), the C-111 Project, and the Experimental Water

Deliveries to Everglades National Park Project. FWS concluded that the operations, if continued, would likely jeopardize the continued existence of the endangered Cape Sable seaside sparrow and adversely modify its critical habitat. In response, the Corps implemented an Interim Structural and Operational Plan (ISOP) in March 2000, followed by the Interim Operating Plan (IOP) in July 2002. These operations were designed to protect the sparrow pending completion of construction of the MWD Project and the C-111 Project. Because of the urgency to implement IOP in time for the next sparrow breeding season, the IOP Final Environmental Impact Statement (FEIS) was completed prior to conclusion of modeling that supported the selected plan. Pursuant to a March 2006 order by the United States District Court for the Southern District of Florida, the Corps will be preparing a supplement to the IOP FEIS. The Supplemental Environmental Impact Statement (SEIS) will update the FEIS with the modeling for the selected alternative, which was completed in November 2002, as well as actual data collected since the May 2002 FEIS. In addition the SEIS will update its analysis of the default condition for the reservoirs.

ADDRESSES: U.S. Army Corps of Engineers, Planning Division, Environmental Branch, P.O. Box 4970, Jacksonville, FL 32232-0019.

FOR FURTHER INFORMATION CONTACT: Ms. Barbara Cintron at (904) 232-1692 or e-mail at Barbara.b.cintron@saj02.usace.army.mil.

SUPPLEMENTARY INFORMATION:

a. The proposed action will be the previously selected Alternative 7R that consists of water management operations of existing structural components of the Central & Southern Florida Project (C&SF Project) to avoid flooding the sparrow breeding habitats during the breeding season and to rehydrate breeding habitats during the annual wet season in order to prevent and reverse habitat degradation.

b. Alternatives will be chosen from the array in the previous FEIS that involve spatial variations in conveying water through the C&SF Project to protect the sparrow.

c. A scoping letter will be used to invite comments on alternatives and issues from Federal, State, and local agencies, affected Indian tribes, and other interested private organizations and individuals.

d. The Draft SEIS will update the Corps' analysis of Alternative 7R with modeling that was completed in November 2002 for that alternative and

compare it to the previous alternatives. In addition, modeling for marsh operations and variable flows at pump station S-356 based on seepage will be used to update the analysis of the default condition for the reservoirs constructed in the C-111 Basin. The previous model could not accommodate the analysis of variable flows at S-356 when the 7R modeling was concluded in 2002. The analysis will also include actual hydrologic field data collected since 2002 and information on subsequent nesting success of endangered species, including the sparrow and the snail kite.

e. The alternative plans will be reviewed under provisions of appropriate laws and regulations, including the Endangered Species Act, Fish and Wildlife Coordination Act, Clean Water Act, and Farmland Protection Policy Act.

f. A scoping meeting is not anticipated.

g. The Draft SEIS is expected to be available for public review in the 3rd quarter of CY 2006.

Brenda S. Bowen,

Army Federal Register Liaison Officer.

[FR Doc. 06-4241 Filed 5-4-06; 8:45 am]

BILLING CODE 3710-AJ-M

DEPARTMENT OF DEFENSE

Department of the Army, Corps of Engineers

Intent To Prepare an Environmental Impact Statement for the Dam Safety Assurance Evaluation Report, Dover Dam, City of Dover, Tuscarawas County, OH

AGENCY: Department of the Army, U.S. Army Corps of Engineers, DoD.

ACTION: Notice of intent.

SUMMARY: Pursuant to the National Environmental Policy Act (NEPA), the U.S. Army Corps of Engineers (Corps), Huntington District will prepare an Environmental Impact Statement (EIS) to disclose potential impacts to the natural, physical, and human environment resulting from modifications to Dover Dam. This high hazard dam does not conform to current design standards related to stability and sliding during a probable maximum flood. Modifications will be performed so the Dam will meet these standards.

DATES: A public scoping meeting will be held on May 24, 2006 from 7-8:30 p.m.

ADDRESSES: Send written comments and suggestions concerning this proposed project to David M. Rieger, PD-R, U.S. Army Corps of Engineers, Huntington

District, 502 Eighth Street, Huntington, WV 25701-2070. Telephone: 304-399-5160. Electronic mail:

david.m.rieger@irh01.usace.army.mil.

Requests to be placed on the mailing list should also be sent to this address.

FOR FURTHER INFORMATION CONTACT: Mr. Rodney Cremeans, U.S. Army Corps of Engineers, Huntington District, 502 Eighth Street, Huntington, WV 25701-2070. Telephone: (304) 399-5170. Electronic mail: Rodney.G.Cremeans@irh01.usace.army.mil.

SUPPLEMENTARY INFORMATION:

1. *Authority:* Investigation and justification of modifications for dam safety assurance to completed Corps of Engineers projects is authorized under Section 1203 of the Water Resources Development Act of 1986 (Pub. L. 99-662).

2. *Background:* a. Guidance for this study is provided in USACE Engineer Regulation 1110-2-1155 for modifying or developing new facilities, raising the dam and/or improving the stability of the dam to accommodate currently anticipated flood volumes.

b. The Corps evaluates structures such as Dover Dam periodically throughout their life. These evaluations are important for identifying trends in the aging process of the structure as well as offering an opportunity to consider developments in the design and weather forecasting sciences. Concerns for the stability of the dam have grown over the life of Dover Dam. Since the construction of the project in the 1930's, the maximum pool recorded was 907.4 (8.6 feet below the spillway crest) in January 2005. No significant problems have been encountered with the dam, however, inflow is very carefully monitored to ensure the safety of the public downstream of the dam.

c. The Corps will continue to manage stability concerns in the event of extreme flooding. However, recent flood events have highlighted the need to address on-going concerns and renew consideration of potential low-frequency extreme flood events.

d. The National Weather Service has published details of procedures and methods that are used to develop generalized estimates of Probably Maximum Precipitation (PMP), the greatest rainfall rates for specified durations that are theoretically possible for regions throughout the United States. These rainfall estimates are considered extreme, with a very low probability of occurrence. However, the worst-case storms associated with the PMP events, retain some probability of occurrence. These PMP events are used



DEPARTMENT OF THE ARMY
JACKSONVILLE DISTRICT CORPS OF ENGINEERS
P.O. BOX 4970
JACKSONVILLE, FLORIDA 32232-0019

REPLY TO
ATTENTION OF

Planning Division
Environmental Branch

MAY 10 2006

TO THE ADDRESSEES ON THE ENCLOSED LIST:

The U.S. Army Corps of Engineers (Corps), Jacksonville District, is beginning preparation of a Supplement to the 2002 Final Environmental Impact Statement (SEIS) on the Interim Operating Plan for Protection of the Cape Sable Seaside Sparrow (IOP) pursuant to a March 2006 order by the United States District Court for the Southern District of Florida. A Notice of Intent (NOI) to prepare the SEIS was published in the Federal Register on May 5, 2006.

The 2002 IOP EIS was prepared in response to a request from the U.S Fish and Wildlife Service to take emergency action to protect the sparrow from water management operations that, if continued, would likely jeopardize its continued existence. Because of the urgency to implement IOP in time for the next sparrow breeding season, the IOP Final Environmental Impact Statement (FEIS) was completed prior to conclusion of hydrologic modeling that supported the selected plan, Alternative 7R. The judicial order requires the Corps to remedy that, but does not require suspension of IOP operations or construction of the structural elements of the plan during preparation of the SEIS. When implemented in August 2002, the IOP was intended to be continued until the completion of the Combined Structural and Operational Plan (CSOP) for the Modified Water Deliveries and C-111 projects.

The proposed action will be the previously selected Alternative 7R that consists of water management operations of existing structural components of the Central and Southern Florida Project (C&SF Project) to avoid flooding the sparrow breeding habitat in sub-population A during the breeding season and to rehydrate breeding habitats in sub-populations C, D, and F during the annual wet season in order to prevent and reverse habitat degradation from excessive dryout and fire frequency. Alternatives will be chosen from the array in the previous FEIS that involve spatial variations in conveying water through the C&SF Project to protect the sparrow and its habitat.

The SEIS will update the Corps' previous EIS analysis of Alternative 7R with hydrologic modeling that was completed in November 2002 for that alternative and compare it to the previous alternatives. The November 2002 modeling included the default conditions for both marsh operations and S-356 operations (daily varying flows with L-31N Canal triggers). The analysis will also include actual hydrologic field data collected since 2002 and information on subsequent nesting success of endangered species, including the sparrow and the snail kite.

We invite the participation of Federal and State agencies, Native American tribes, local agencies, and interested organizations and individuals in providing comments and identifying

any issues. Please share this letter with any interested party not included on the address list, and send any comments you may have to the attention of Ms. Barbara Cintron at the letterhead address or email barbara.b.cintron@usace.army.mil by June 16, 2006. All individuals who respond with comments will be included in future mailings. Others may be included by making a request in writing (postcard) to the same address or by email.

Sincerely,


Stuart J. Appelbaum
Chief, Planning Division

Enclosure

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FL KEYS AQUEDUCT
1100 KENNEDY DRIVE
KEY WEST FL 33040

MICHAEL ANDERSON
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10088 NW 53 STREET
SUNRISE FL 33351

DIRECTOR
MIAMI-DADE COUNTY DERM
33 SW 2ND AVENUE SUITE PH 2
MIAMI FL 33130

ROSCOE WARREN
PUB WORKS & SVCS DEPT
CITY OF HOMESTEAD
551 SE 8TH STREET
HOMESTEAD FL 33030

TIM TOWLES
FFWCC
255 154TH AVENUE
VERO BEACH FL 32968-9041

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PUBLIC WORKS & SVCS DEPT
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551 SE 8TH STREET
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1211 GOVERNOR'S SQUARE BLVD
TALLAHASSEE FL 32301-2988

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WATER RESOURCES MGR
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WEST PALM BEACH FL 33401

MARJORIE BIXBY
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MIAMI FL 33172 (12 CY)

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MARTIN COUNTY
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STUART FL 34996

KEN TODD
WATER RESOURCES MGR
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WEST PALM BEACH FL 33401

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TALLAHASSEE FLORIDA 32399-0450

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3RD FLOOR
FT MYERS FL 33902

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MAITLAND FL 32751-4811

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FL WILDLIFE FEDERATION
LAKE OKEECHOBEE PROJ DIR
125 ST MARKS RISE ROAD
CRAWFORDVILLE FL 32327

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EVERGLADES COORD COUNCIL
22951 SW 190 AVENUE
MIAMI FL 33170

JEFFERSON PILOT COMMUNIC
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MIAMI FL 33169-2505

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2545 BLAIR STONE PINES DRIVE
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FRANK DENNINGER
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SOCIETY
461 E 40TH STREET
HIALEAH FL 33013

CARRIE BEELER
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U S SENATOR BILL NELSON
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THOMAS P WILCZAK
RADIO ONE
PEPPER HAMILTON LLP
100 RENAISSANCE CTR (SU 3600)
DETROIT MI 48243-1157

TAD BURKE
FL KEYS FISHING GUIDES
ASSOCIATION
139 INDIAN MOUND TR
TAVERNIER FL 33070

U S REP DEBBIE WASSERMAN
SCHULTZ
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PEMBROKE PINES FL 33026

THOMAS MACVICAR, P.E.
MACVICAR, FREDERICO & LAMB
INC
4524 GUN CLUB ROAD SUITE 201
WEST PALM BEACH FL 33415

RUDIGER BIELER (PHD)
HEAD, DEP OF ZOOLOGY/INV
FIELD MUSEUM OF NATURAL
HISTORY & UNIV. OF CHICAGO
CHICAGO, IL 60302

U S REP LINCOLN DIAZ-BALART
8525 NW 53RD TERRACE STE 102
MIAMI FL 33166

MIAMI-DADE PUBLIC LIBRARY
ATTN: PAM HOGUE
HOMESTEAD BRANCH
700 N HOMESTEAD BLVD
HOMESTEAD FL 33030

TAMARA CHANMUGAM
3724 DONALD AVE
KEY WEST FL 33040

U S REP ALCEE HASTINGS
2701 W OAKLAND PARK BLVD
SUITE 200
FT LAUDERDALE FL 33311

MIAMI-DADE PUBLIC LIBRARY
MAIN LIBRARY – FLORIDA RM
101 WEST FLAGLER STREET
MIAMI FL 33130

ROBERT CHERRY
301 PERKINS STREET
BOONE, NC 28607-5313

U S REP KENDRICK R. MEEK
10100 PINES BLVD
THIRD FLOOR, BUILDING B
PEMBROKE PINES, FL 33026

PALM BEACH COUNTY LIBRARY
MAIN LIBRARY
3650 SUMMIT BLVD
WEST PALM BEACH FL 33406

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CLEAN WATER ACTION
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MIAMI, FL 33139

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HOMESTEAD, FL 33031

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%MICCOSUKEE TRIBE OF FLORIDA
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TAMIAMI STATION FL 33144

JENNIFER SHABER
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PALM CITY FL 34990

MS MARLA TOOLE
OSCEOLA CAMP
%MICCOSUKEE TRIBE OF FLORIDA
PO BOX 440021
TAMIAMI STATION FL 33144

MARA SHLACKMAN
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FT LAUDERDALE, FL 33316

SEMINOLE TRIBE OF FLORIDA
ATTN: W. S. STEELE
AH THA THI KI MUSEUM
HC-61, PO BOX 21-A
CLEWISTON FL 33440

JOHN SKLEPOWICZ
8287 SW 128TH ST #106
MIAMI, FL 33156

MARTIN SLATER
9700 NW 83 STREET
TAMARA, FL 33321

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EVERGLADES FOUNDATION
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OSPREY, FL 34229

ROBERT E. STUCKER
10040 SW 199 STREET
MIAMI, FL 33157-8623

PAT SUITER
14705 NE 11TH COURT
N MIAMI FL 33161

From: Bernabei, Catharina [cbernabei@braddock.dadeschools.net]

Sent: Monday, May 22, 2006 7:21 AM

To: Cintron, Barbara B SAJ

Cc: Alan Nowell; Bernabei, Catharina; Maria Papazian

Dear Stuart Appelbaum, Barbara Cintron:

I received your letter indicating the urgency to save the endangered Cape Sable Seaside Sparrow by implementing the IOP in time for the next breeding season . PLEASE DO SO! I am not an engineer , but a special education public school teacher, who takes her students to enjoy and admire the beauty ,tranquility of the everglades and its wildlife ,including the birds, the sparrows.

I do not know what is the best formula to save the glades ,but it would make sense to correct as best as possible the natural flow of the river of grass , by allowing as much uninterrupted water to flow in a natural way into the park , therefore I strongly advise you to build the 10.7 mile SKYWAY. Money matters should not be a concern ,history has taught us that cutting corners cost us more than doing it right the first time. But when have humans learned anything from history? Please read "The Swamp " by Michael Grunwald.

I am also a sierra outings leader and want to stress to you that being concerned for our resources is not a luxury or a hobby for 'tree-huggers'- etc , but our very survival , the future of our children, grandchildren depend on protecting the environment . Everyone should be very concerned, like the cover of time magazine said : be worried ,very worried. (about the global warming ,the pollution of the planet , the threat to polar bears ,etc) We as a species have not the right to say : this species is not important, this snail, wildflower, bird ,insect.. one day that very same endangered species , plant may save your child's life. We need to stop being greedy and we need to nurture and protect what we have , be grateful with what we have , do with less, invest in new resources and technology , research and learn from history! We need to share our resources ,knowledge and technology with other people on earth. The everglades belong to the world , it is a world heritage site. The Cape Sable Seaside Sparrow belongs to the world . PLEASE DO WHAT YOU CAN TO SAVE THE SPARROW , IT'S HABITAT ,THE EVERGLADES. Thank you

Catharina ' Kaatje' Bernabei

EDWARD D. LOSCH
2603 Juniper Court
Palm City, Florida 34990
772-336-4725

May 12, 2006

Mr. Stuart J. Appelbaum
Chief, Planning Division
Department of the Army
Jacksonville District Corp of Engineers
P.O. Box 4970
Jacksonville, Florida 32232-0019

SEIS to the 2002 IOP for the Cape Sable Seaside Sparrow

Let's get our priorities straight. If the Corp and South Florida Water Management District cannot save both the Cape Sable Seaside Sparrow and the St. Lucie Estuary with all its inherent aquatic life, then the sparrow should be forced to try to relocate its habitat.

The aquatic life in the St. Lucie River has been repeatedly killed or been driven out of its natural environment by the excessive discharges of Central Florida's polluted fresh water over the last many decades.

We are all for protecting and preserving endangered species but not at the expense of an entire waterway like the St. Lucie River.

Very truly yours

Edward D. Losch

SAI# FL200605152302C

USACE - Notice of Intent to Prepare a Supplement to the 2002
Final Environmental Impact Statement (SEIS) on the Interim
Operational Plan (IOP) for Protection of the Cape Sable Seaside
Sparrow, Everglades National Park - Miami-Dade County, Florida.

The above-referenced project was received by the Florida State Clearinghouse on 5/15/06, and has been forwarded to the appropriate reviewing agencies. The clearance letter and agency comments will be forwarded to you no later than 6/30/06, unless you are otherwise notified. Please refer to the State Application Identifier (SAI) number in all written correspondence with the Florida State Clearinghouse regarding this project. If you have any questions, please contact the Clearinghouse staff at (850) 245-2161. Tony; Vanessa Holmes

Lauren Milligan: Call 5/31

36th Floor
100 Renaissance Center
Detroit, MI 48243-1157
313.259.7110
Fax 313.259.7926

313.393.7398
wilczakt@pepperlaw.com

June 16, 2006

Ms. Barbara Cintron
U.S. Army Corps of Engineers
Jacksonville District
P.O. Box 4970
Jacksonville, FL 32232-0019

Re: Supplement to the 2002 Final Environmental Impact Statement:
Interim Operational Plan (IOP) for Protection of the Cape Sable Seaside Sparrow
("Supplemental EIS")

Dear Ms. Cintron:

Radio One, Inc. is in receipt of the U.S. Army Corps of Engineers ("Corps") letter dated May 10, 2006, regarding the above-referenced matter. It is our understanding that the Corps is updating its analysis of Alternative 7R with hydrologic modeling. Radio One continues to be concerned with the potential impact to the approximately 80 acre parcel that it owns within the Northeast Shark River Slough ("NESRS") area upon which it operates 7 radio towers and one transmitter building. The towers broadcast to the Miami area on 1080 kHz (WVCG) pursuant to a FCC license and serve diverse segments of the community with programming that is not otherwise available in the area.¹

I have attached for your convenience Radio One's prior comments that it submitted on April 9, 2001. Radio One appreciates the opportunity to comment, and trusts that its comments and concerns will be considered and accommodated in the Supplemental EIS and the final IOP, with appropriate mitigating actions being included within the scope and costs of the IOP.

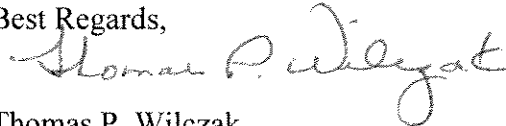
Radio One requests that it be kept on the mailing list for any further materials that are generated for the IOP and associated EIS. Finally, please keep us advised as to any public meetings scheduled for this project.

¹ The property previously was owned by AMFM Operating, Inc.

Barbara Cintron
June 16, 2006
Page 2

Please send all such mailings to my attention at the above address. You also should feel free to contact me if you have any questions regarding this correspondence.

Best Regards,

A handwritten signature in cursive script, appearing to read "Thomas P. Wilczak".

Thomas P. Wilczak

TPW:lmf

cc: John Moulding (via telecopier)
John Mathews (Radio One)

36th Floor
100 Renaissance Center
Detroit, MI 48243-1157
313.259.7110
Fax 313.259.7926

313.393.7398
wilczakt@pepperlaw.com

April 9, 2001

VIA EMAIL AND FEDERAL EXPRESS

Elmar Kurzbach
U.S. Army Corps of Engineers
Jacksonville District
P.O. Box 4970
Jacksonville, FL 32232-0019

Re: Draft Environmental Impact Statement: Interim Operational Plan (IOP)
for Protection of the Cape Sable Seaside Sparrow ("Draft EIS")

Dear Mr. Kurzbach:

This letter contains the public comments of Radio One, Inc. to the above-referenced Draft EIS. Pursuant to a telephone conversation on April 4, 2001 with my legal assistant, Ellen Zapalski, you indicated that comments would be accepted if submitted via email by the April 9, 2001 due date as long as a copy was mailed on the same day.

Radio One understands that the U.S. Army Corps of Engineers ("Corps") proposes to implement the IOP that is the subject of the EIS to attempt to provide protection of the Cape Sable Seaside Sparrow ("CSSS"), while also continuing to provide flood protection through the project.

Radio One, however, is concerned that the EIS failed to adequately consider the impacts of the project, particularly of the Phase II operations, on property in the study area, particularly properties within the Northeast Shark River Slough ("NESRS"). Radio One owns a parcel of approximately 80 acres within that area upon which it operates 7 radio towers and one transmitter building. The towers broadcast to the Miami area on 1080 kHz (WVCG) pursuant to a FCC license and serve diverse segments of the community with programming that is not otherwise available in the area.¹

Specifically, the Radio One property is located adjacent to and immediately south of Tamiami Trail (U.S. Hwy 41) in Section 8, T54S, R38E (N. Latitude: 25° 44' 53"; and W.

¹ The property previously was owned by AMFM Operating, Inc.

Elmar Kurzbach

April 9, 2001

Page 2

Longitude: 80° 32' 47"), approximately four miles west of the L-31N Canal, and about five miles west of Krome Avenue (SR997). The towers and structures, which were constructed in 1980 are situated on fill pads and access from Tamiami Trail is provided along a filled road bed.

The pads and road bed were intentionally constructed above the 100 year flood level to assure access. As a result, Radio One has not had any problem with flooding or access, seasonal or otherwise. Radio One, however, is concerned that the IOP will create problems for Radio One's operations that were not considered or addressed in the draft EIS.

Based upon a review of the anticipated increased water levels in the area of the Radio One property, as determined by Corps IOP project modeling (which modeling appears to have failed to fully and adequately address all hydrologic parameters and effects in the area), it appears that the IOP project likely may result in:

- A loss of access to Radio One's property via its existing access road, at least on a seasonal basis
- Flooding of the pads upon which its towers and structures are situated, at least on a seasonal basis
- Difficulty in servicing its towers and structures during such resulting high water conditions, and possible total loss of such service during those time periods
- Disruption, distortion or elimination of a public service to diverse segments of the Miami area community, which service is not otherwise available to such communities.

Additionally, the increased water levels likely may result in erosion damage to the road beds and tower pads, which could threaten the tower's structural integrity, and result in increased maintenance and upkeep costs, and cause an environmental sedimentation impact upon the local ecosystem if the pads and road beds are eroded. Moreover, it may become necessary to access the towers via a motor boat, which in turn may result in environmental impacts that were not addressed in the EIS. The increased water levels also could result in signal disruption or distortion interfering with Radio One's broadcast capabilities.

As a result of such effects, Radio One likely may incur significant costs to mitigate the impacts, such as, re-building or raising the grade of the access road and the tower pads, amending its FCC license or loss of value of such license, and possibly needing to reconfigure the signal from its tower or, in the worst case, relocate its towers altogether (assuming a suitable alternative location is even available). Radio One believes that the draft

Elmar Kurzbach

April 9, 2001

Page 3

EIS is flawed, and that these socio-economic, economic and environmental impacts and costs must be considered in the final EIS for the IOP project.

If such adverse impacts are not planned for and mitigated with the IOP for the project, Radio One's property interest likely may be significantly reduced, or completely taken in the worst case, as a result of the government's actions. In such case, Radio One will look to the government for appropriate compensation.

Radio One has been further informed that a related project entailing physical modifications to Tamiami Trail in the area of its property is being planned. Radio One is concerned about the potential impacts, and associated costs, that might result to its continuing access to its property via its access road off of Tamiami Trail.

Radio One appreciates the opportunity to comment, and trusts that its comments and concerns will be considered and accommodated in the final draft EIS and the final IOP, with appropriate mitigating actions being included within the scope and costs of the IOP.

Radio One requests that it be kept on the mailing list for any further materials that are generated for the IOP and associated EIS, including the response to these comments, the draft final EIS and the anticipated future Combined Structural and Operations Plan ("CSOP), along with the draft EIS for the CSOP. Radio One further requests being placed on the mailing list for all plans, including the draft EIS, for the Tamiami Trail modification project. Finally, please keep us advised as to any public meetings scheduled for these projects.

Please send all such mailings to my attention at the above address. You also should feel free to contact me if you have any questions regarding this correspondence.

Very truly yours,



Thomas P. Wilczak

lmf

c: John Moulding (via telecopier)
Linda Eckard Vilardo, Esq. (Radio One)
John Mathews (Radio One)
Brian Considine

June 13, 2006

LTG Carl A. Strock (Carl.A.Strock.ltg@hq02.usace.army.mil)
Commanding General & Chief of Engineering
U. S. Army Corps of Engineers
441 G Street NW
Washington, DC 20314-1000
Fax: 202/761-4463

Colonel Robert M. Carpenter, District Engineer (Robert.M.Carpenter@saj02.usace.army.mil)
Lawrence C. Evans, Chief Regulatory Division (Lawrence.C.Evans@saj02.usace.army.mil)
Marie G. Burns, Chief, "Environmental" Branch
Atten: Carrie Bond (Carrie.L.Bond@saj02.usace.army.mil)
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Atten: Barbara Cintron (Barbara.B.Cintron@usace.army.mil)
Atten: Barbara Cintron (Barbara.B.Cintron@saj02.usace.army.mil)
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U. S. Army Corps of Engineers, Jacksonville District
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Jacksonville, FL 32232-0019
701 San Marco Blvd.
Jacksonville, FL 32207
Fax: 904/899-5095
Fax: 904/232-1684

**Re: Request for extension of time
Broward County Water "Preserve" Area (BCWPA) Project
L-31 N (L-30) "Seepage Management Pilot Project" (SMPP)/N Everglades National Park
Supplement to 2002 Final Environmental Impact Statement/Cape Sable Seaside Sparrow
Draft Project Implementation Report (PIR) with
Integrated EIS for Central/Southern FL Project, Broward County Water Preserve Areas
Draft Environmental Impact Statement/
Everglades National Park (ENP) Seepage Management Project
Any other proposed or pending applications/actions in the Greater Everglades Watershed**

Dear Commanding General and Chief Strock and other relevant Corps employees:

Thank you for the opportunity to submit comments regarding your agency's mailed notices pertaining to proposed projects referenced above. All of the proposed projects and agency actions would be located within the Greater Everglades Watershed. Each of the letter notices identified a different contact/response person.

Please note that the electronic address provided for Barbara Cintron in Mr. Appelbaum's notice letter dated May 10, 2006, included a domain address different from all of the other electronic addresses for Jacksonville District Corps staff (Barbara.B.Cintron@usace.army.mil). Because the difference in the address for Ms. Cintron might be the result of a typographical error in Mr. Appelbaum's letter, I have forwarded an electronic copy of my comment letter and referenced attachments to both versions of Ms. Cintron's electronic address. The date of each of your agency's notice letters for the referenced projects is provided in the following list:

5/30/06 BCWPA Project - Supplemental Public Notice/2005-7528(IP-TW)
 C-9 Impoundment
 C-11 Impoundment
 Water "Conservation" Area (WCA) 3A/3B "Seepage" Management Area (SMA)
 5/15/06 EA: L-31 N (L-30) "Seepage Management Pilot Project"
 5/10/06 Supplement to 2002 Final EIS/Cape Sable Seaside Sparrow
 (Combined Structural & Operational Plan (CSOP) for Modified Water Deliveries/C-111 projects)
 3/6/06 Draft Project Implementation Report (PIR) with
 Integrated EIS for Central/Southern FL Project, Broward County Water "Preserve" Areas
 2/21/06 Draft Environmental Impact Statement/
 Everglades National Park (ENP) Seepage Management Project

Time Extension:

The primary purpose of this letter is to request that an extension of time be granted for the public and other agencies to submit comments on the proposed projects listed above and all other proposed and pending federally funded, permitted or authorized projects in the Greater Everglades Watershed. The time extension is requested until after: a) Judge Hoeveler's final ruling on the case remanding your agency's joint permit issued to 10 firms for mining and exporting the Everglades' surficial aquifer rock formation; b) resolution of the fatal flaws with the "Compensatory Mitigation for Losses of Aquatic (e.g., wetlands, streams) Resources" in Florida; and c) completion of a Supplemental Environmental Impact Statement (EIS) for Everglades Restoration resolving all of the deficiencies identified in Judge Hoeveler's March 22, 2006 Order regarding mining in the Greater Everglades Watershed. One of the conclusions of that Order (Case No. 03-23427-CIV-Hoeveler) was that the Corps and the U.S. Fish and Wildlife Service (FWS) had "failed to carry out their duty to protect the federal wetlands and protected species." An electronic copy of that Order is being forwarded to you in four pdf files as an **attachment** to this letter.

Relevance of Hoeveler's Order:

Hoeveler's March 2006 Order is relevant to the proposed projects referenced above in several respects. The overriding action addressed in that case is large-scale dredging and discharge in the Everglades, including Everglades wetlands. The proposed projects referenced above also involve large-scale dredging and discharge in the Everglades, including Everglades wetlands, but are referred to in euphemistic terms (e.g., "impoundment," "seepage," "reservoir," "Conservation Area," "Preserve"). All of the proposed projects referenced above would result in significant additional environmental destruction of the Greater Everglades Watershed.

The March 2006 Order addresses the Corps' failure to adequately evaluate alternatives, indirect impacts, and cumulative impacts of large-scale dredging and discharge in the Everglades. In my opinion, those inadequacies and the other inadequacies described in detail in the Order have pervaded all of the above-referenced Environmental Assessments (EA) and EISs conducted by your agency, as well as the "Comprehensive Everglades Restoration Plan." Consequently, all of the inadequacies described in Hoeveler's March 2006 Order should be resolved in Supplemental EISs for each of the proposed projects referenced above before any further agency action - other than the purchase of environmentally sensitive lands - is taken.

Misleading Information:

The projects proposed above (and proposed Everglades "restoration") rely, in part or in whole, on the assumption that Stormwater Treatment Areas (STA) in the Everglades have reduced and will reduce pollutants discharged to waters of the U.S., including coastal waters. That assumption is based, in part or in whole, on water quality data from "S2" discharges. The "S2" facility is in the vicinity of Belle Glade.

Flow data recorded by the South Florida Water Management District (DB HYDRO), as estimated average monthly flow through S2 from the period of 1995 through 2005, reveals that flow (discharge) from S2 remained at or near zero after late 2001. The only exception was one discharge peak of approximately 200 cubic feet per second (cfs) in late 2004. Prior to the cessation of flow from "S2" the discharge peak was approximately 1200 cfs. By virtually halting flow (discharge) from "S2," any improvements in downstream surface water quality may suggest that the upstream STA is reducing pollutant levels in the water. In reality, however, reductions in downstream surface waters likely are the result of severe reductions in (cessation of) "S2" discharges.

"Seepage" v. Groundwater Flow:

The projects proposed above (and the proposed Everglades "restoration") also are based on the presumption the "seepage" is the controlling groundwater force in the proposed project areas. This presumption is not supported by fact.

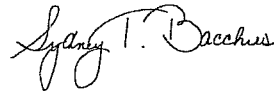
One of the most recent scientific studies to confirm that high velocities of groundwater flow occur along preferential flow paths in Florida's karst aquifer system was described in the 2005 peer-reviewed publication by Renken et al. (electronic copy **attached**). That dye-tracer study documented apparent mean advective velocity between wells that was "one to two orders of magnitude greater than previously measured." High groundwater flow velocities reduce attenuation of contaminants (pollutants).

The fact that groundwater "seepage" is the sole focus of groundwater flow in the projects proposed above (and proposed Everglades "restoration"), with no attention to high-velocity flow through preferential flow paths, supports the conclusion that all of the proposed projects are fatally flawed. Constructing more "impoundments" to "store" highly contaminated water in the Everglades simply will force more of the highly contaminated water to discharge rapidly (as groundwater flow and groundwater discharge), into surface waters of the U.S., including coastal waters.

Previous Comments:

Virtually all of my previous comment letters to your agency during the past six years are relevant to the problems with the projects proposed above. I am resubmitting electronic copies of my five letters to you listed as **attachments** below. Please ensure that a copy of all attachments referenced in this comment letter are incorporated into the file of record in their entirety as my formal comments regarding these proposed projects.

Sincerely,



Sydney T. Bacchus, Ph. D.
Hydroecologist
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List of Attachments:

3/22/06 Federal Order (Case No. 03-23427-CIV-Hoeveler)
2005 Renken et al., Environmental and Engineering Geoscience, Vol. XI, No. 4, pp. 319-331
5/30/06 Bacchus letter to Corps/EPA (Watershed Mitigation)
4/4/05 Bacchus letter to Corps (Palm Beach Pits)
7/5/04 Bacchus letter to Corps (Glades "ASR")
6/13/04 Bacchus letter to Corps (Keys UIC)
4/18/01 Bacchus letter to Corps (Everglades Pits)

cc: **Elected Officials**
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